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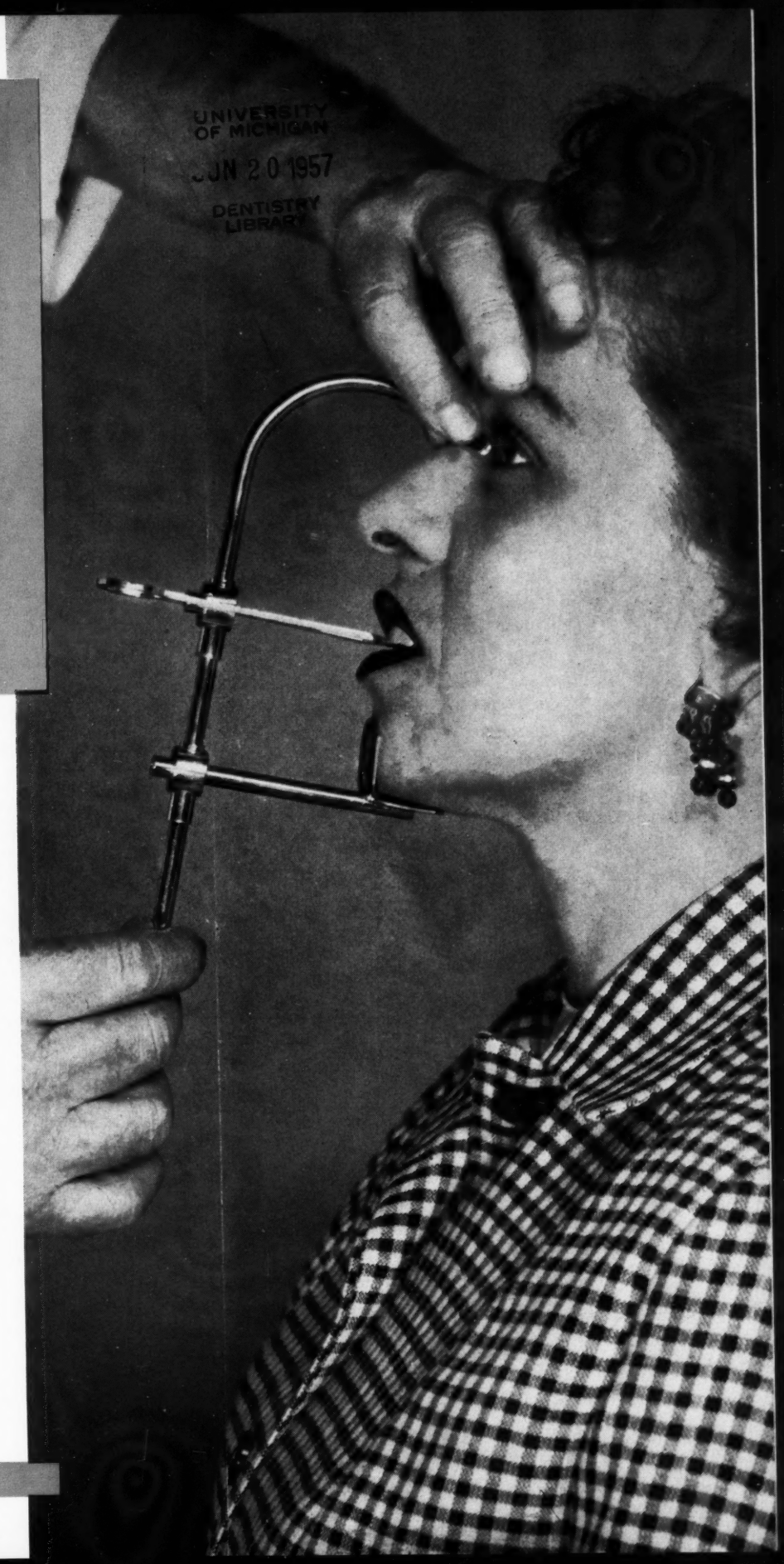

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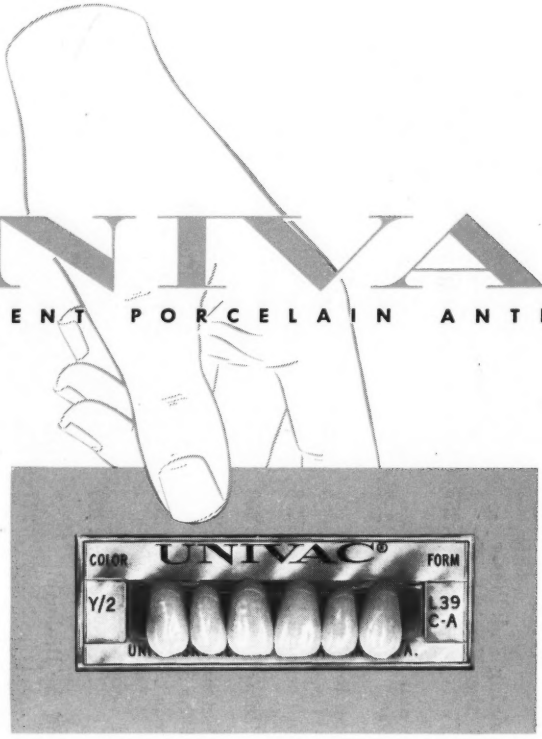

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Vol. 63, No. 6

Dental Digest

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(Max B. Winslow who contributed the article, FIXED BRIDGE AND SPLINT ASSEMBLY TECHNIQUE in our May, 1957 issue is still the head of the periodontics department at Sinai Hospital in Detroit).

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Further Refinements in CAST PLATINUM-BAKED PORCELAIN *Restorations*

THEODORE H. PERLMAN, D.M.D., Chicago

DIGEST

The restoration of lost teeth has become a major part of the practice of dentistry. Education of the patient has increased his desire to keep the dental arch intact both from considerations of health as well as appearance. In response to patient demand, new techniques have been developed and fine materials have been adapted in these procedures. This article discusses later technical procedures and in particular the application of a cast platinum and baked porcelain technique to secure an efficient abutment with excellent cosmetic qualities.

Problems Encountered in Restoration Techniques

The construction of a fixed bridge involves the abutments and pontics. The complete development of cast platinum and baked porcelain offers a technique, whereby an excellent, efficient, and attractive abutment can be built with complete confidence in the result. The more recent knowledge of plastics adapted to gold technique provides the practitioner with a choice of abutment construction. The most difficult problem remains the pontic restorations. Many designs and materials, costly to build and difficult to replace, have been used with average results. Cosmetic values were not perfect and gingival irritation presented a problem.

New Materials Available—The development of the Cerami Crown for anterior and posterior pontics and the Steele's side groove for posterior pontics, gives the practitioner an attractive, strong replaceable tooth comparatively simple to construct and economically within the scope of all good restorations.

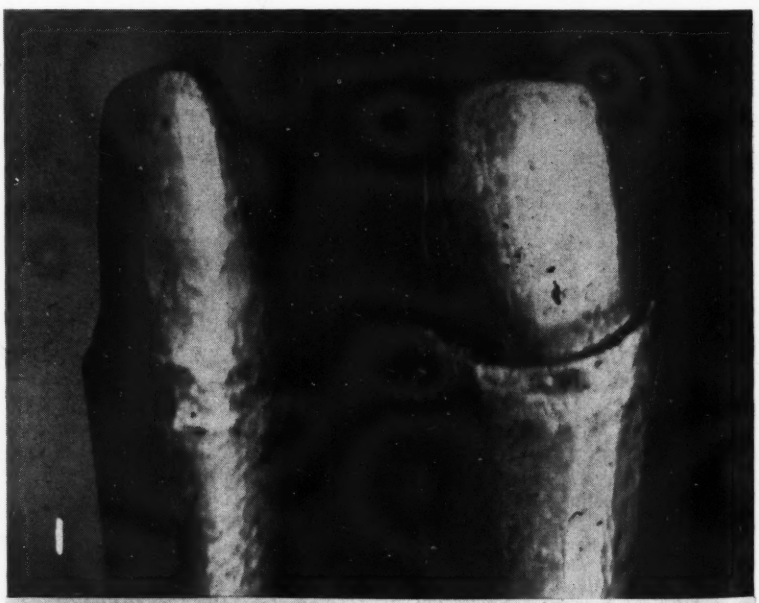
Principle Employed Not New — Thimble type porcelain pontics have been used for years. The technique required a great deal of time and therefore was costly. In the event of breakage, the pontics were not quickly replaceable. A complete new jacket crown had to be baked, involving as much time as the original procedure.

Material of Choice—Baked porcelain is the material of choice for fine dentistry with excellent cosmetic quality. In accepting baked porcelain, although it has been reduced to a minimum, the breakage potential must be accepted. The development of the replaceable porcelain pontics has lessened the hazards of breakage due to the fact that a comparatively quick inexpensive repair can be made.

Economics a Major Consideration in Restorative Dentistry—If the accidental breakage of a pontic, which seems to be the most vulnerable part of a bridge, required the rebuilding of the entire restoration, the economic problem would be increased. But with this new development the patient can be assured of a minimum cost of upkeep.

Restorative Procedures—Preparation of Abutment Teeth

A shoulder or shoulderless preparation (Fig. 1) can be used in the prep-



1. *Copper-plated die, showing shoulderless and shoulder preparation.*

aration of abutment teeth for full crown restorations. When the abutment restoration has a metal base involving the margins a shoulderless preparation is sufficient. It is the preparation of choice in bell-shaped teeth as it does not destroy as much tooth structure as the shoulder preparation. Cast platinum can be adapted perfectly to this type of margin. The following factors are included:

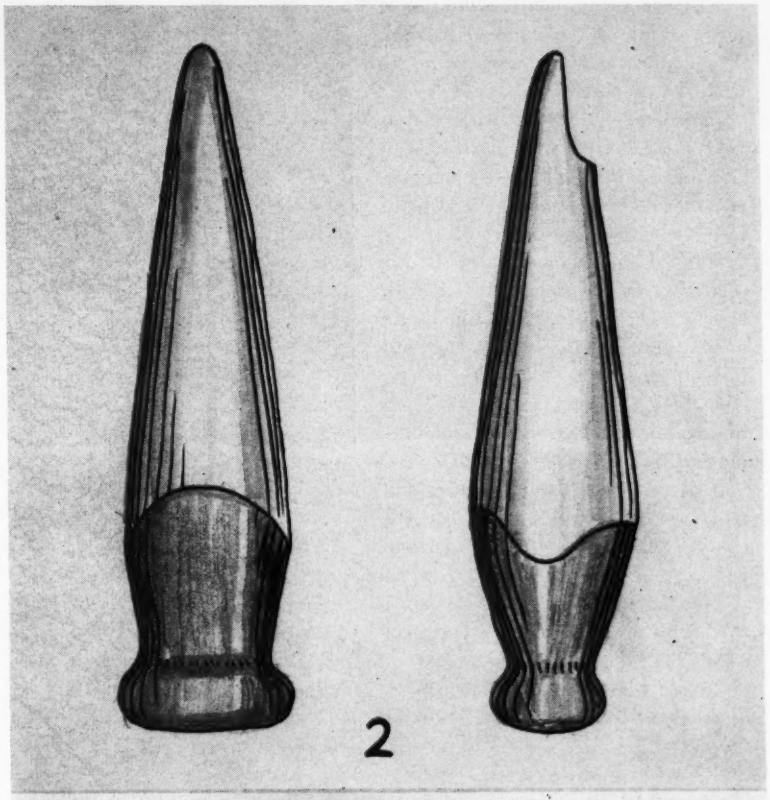
1. All axial walls must be parallel, preferably slightly diverging. The closer the walls are to parallel the more retention is produced.

2. Concerning retention and ease of fit the following rule is applied:

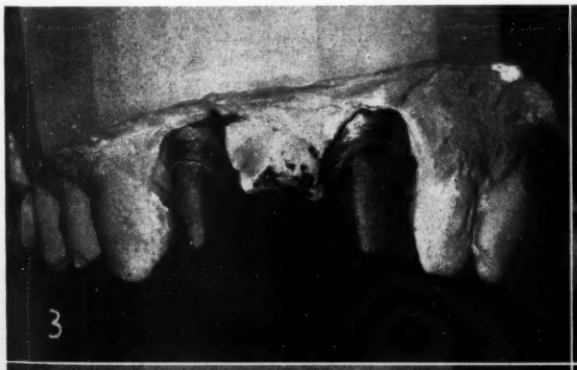
The shorter the crown the more parallel the axial walls should be. If the crown is of considerable length the walls can be diverging and still offer enough retention. The longer the bridge span the more retention is necessary, therefore the essential factor in preparation is the judgment of the operator.

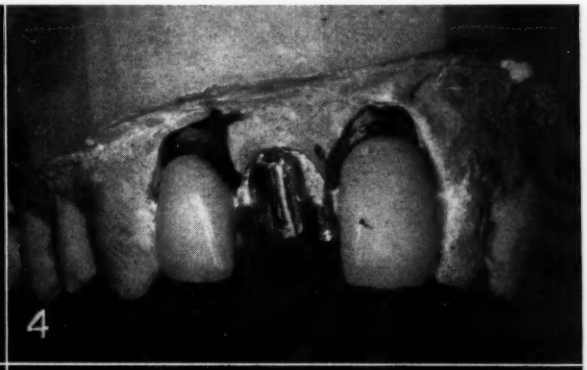
Impression of Prepared Abutments —The following steps are taken:

1. Fill in all undercuts due to caries.



2. ***Gold transfer core, showing umbrella design.***





3. ***Stone model with copper-plated dies in place. Restoration from right lateral to left central.***

4. ***Perlcraft platinum and porcelain abutments in place with gold core of the Cerami crown pontic.***

5. ***Completed assembly on the model.***

6. ***Completed bridge, ready to place in the mouth.***

2. Prepare a copper band to follow the contour of the gingival margin. The band should be slightly larger than the prepared tooth.

3. Isolate the tooth with cotton rolls and lubricate with glycerin.

4. Warm inlay wax to a homogeneous consistency. Fill band and place in position over the tooth.

5. Chill and remove.

6. Protect the prepared tooth with a temporary plastic crown filled with a sedative cement after drying and insulating.

Dies—1. Copper plate the wax band impression and then fill with low fusing metal.

2. Remove the band and wax and trim the root end of the die so that it can be removed easily from a stone model.

Transfer Cores—1. Place 28-gauge wax over crown. Reinforce where necessary.

2. Add blue wax to the incisal or occlusal end to form a slight umbrella (Fig. 2).

3. Cast in clean old gold. This casting must fit the die perfectly.

Impression of Span—1. Remove the temporary plastic crowns and clean all cementing substance from the tooth.

2. Fit gold transfer cores. These cores must fit perfectly.

3. Check the gingival margin, so that the cores will duplicate the finished platinum casting.

4. Select a tray to extend at least to the bicuspid regions on both sides of the arch.

5. Relieve all undercuts with the material of choice (soft carding wax, or Mortite) such as interproximal spaces of the remaining teeth, large bony interferences.

6. Place the gold cores on the abutments after a slight film of soft carding wax has been placed on the inside or axial side of the crown.

7. Use a good plaster for impression. Remove in one piece or as near one piece as possible.

8. Take an impression of the opposite arch in colloid and a wax bite where necessary. If enough teeth are in occlusion, it is better technique to articulate without a wax bite.

9. Determine the shade. Replace the temporary restoration.

The Model—1. Place the dies in the gold cores and wax in place. Use wire or pins to stabilize the dies in the cores if necessary. Use a hard stone for model.

2. After setting, remove the plaster impression and gold cores. Tap out dies and trim the model.

3. Replace the dies in the model, articulate, and mount on an articulator of choice.

Abutments — 1. The material of choice in all abutments is cast platinum

7. ***Lingual view of completed bridge on the model. Note Perlcraft coping type abutments and metal boxing of the Cerami crown pontic.***

8. ***Upper lateral completely denuded of bone, elongated, and having a fistulous tract opening liabially Removal is necessary. Note diastema due to the shifting of centrals. The left central has lost sufficient bone to warrant the use of both left and right centrals as the anterior abutments and also to prevent further migration.***

9. ***Completed case. Perlcraft coping crowns on upper left cuspid, left and right centrals. Cerami crown for lateral pontics.***

and high fusing porcelain. The design can either be a full veneer or a coping. In extremely close bites the veneer platinum and porcelain crown should be used. When there is sufficient space for a thickness of approximately 1 millimeter, the coping type abutment is ideal. The coping type affords better cosmetic effects.

2. In all cast platinum and baked porcelain techniques the abutments are completed before the bridge is assembled. It is always more meticulous technique to try the abutments for shade, contacts, and contour. This should be done in the high biscuit bake. Any changes that become necessary can be done at this time.

3. If plastic and gold technique is used, the gold coping or veneer is cast and adapted to the dies and the necessary adjustments made. The plastic veneer is not completed until the bridge is assembled.

Final Steps in Reconstruction Procedure

1. A Cerami tooth is selected for shape, size, and shade. Relieve the ridge of the model as desired.

2. Fit the pontics by grinding and adding porcelain.

3. A 2200 porcelain, such as Austenal, may be used to improve the contour of size and altering the shade as desired. After the Cerami crown is completed for contour, the shade can still be altered, by using stain, such as Steele's 1800.

4. A plaster core should be made of the abutments and pontics in place.

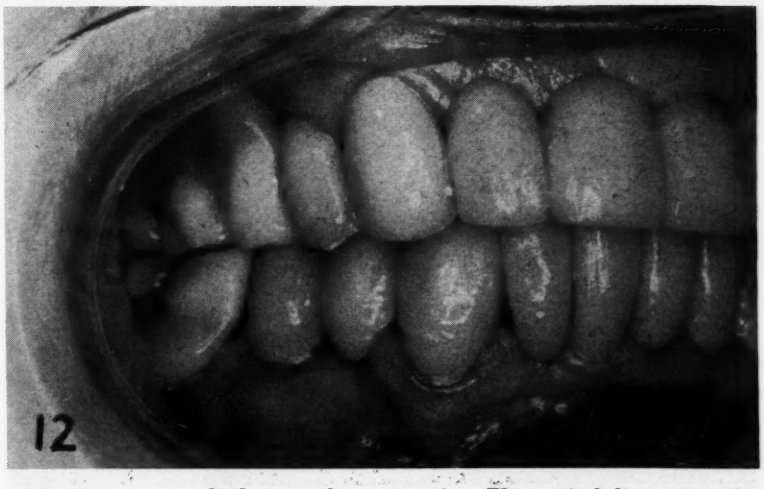
Procedure for Gold Frame for Cerami Crown—1. Lubricate the finished Cerami crown. Adapt inlay wax into crown and contour gingival as desired. As little metal as possible should be in contact with the mucous membrane covering the ridge.

2. Mesial and distal areas should be large enough to accommodate a good soldering joint.

3. Remove the crown. Sprue the wax pattern and cast in a hard gold.

4. Make whatever adjustments are necessary in fitting the crown to the casting. Finish and polish the casting.

Assembly — 1. Place the finished abutments and pontics on the model using the plaster core, previously



10. ***This case involved a complete restoration. The vertical dimension was raised 4½ millimeters. Note the wear on the upper anterior plastic bridge. The teeth remaining are the upper right first bicuspid and cuspid; upper left cuspid and first bicuspid; lower left cuspid, lateral, and central, right central, lateral, cuspid, and second bicuspid.***

11. ***Completed case. The upper four remaining teeth are used as abutments. Perlcraft veneer crowns are shown on the bicuspid; Perlcraft veneer crowns on the cuspids. Cerami crowns are used for central and lateral pontics. The posterior is restored with a precision removable bridge.***

12. ***Side view of case shown in Figures 10 and 11.***

13. ***The upper right cuspid was missing. The patient was wearing a bridge extending from the first bicuspid to the lateral. The lateral was elongated and had pockets involving apex, necessitating removal. The first bicuspid and right central had sufficient bone destruction to warrant the extension of the abutments to the right second bicuspid and left central. Four teeth are used as abutments, the two bicuspids and two centrals.***

14. ***The completed case. Perlcraft veneer crowns on bicuspids, perlcraft coping crowns on centrals and cerami crown pontics***

15. ***Another view of the case shown in Figures 13 and 14.***

made, for alinement. Make the necessary adjustments.

2. Wax the entire case.

3. Remove the plaster core.

4. Make the soldering investment core while the assembly is still on the model.

5. Reinvest in soldering investment. Complete the soldering in the usual manner.

6. If the abutments are platinum and porcelain, completely cool under a bell jar before removing the investment plaster.

7. Finish and polish thoroughly. A highly polished hard gold surface, properly adapted to the ridge is thoroughly compatible with the mucous membrane.

Cementing—1. Try the case in the mouth before cementing the Cerami crowns. Make necessary adjustments.

2. If the pontics are ground for occlusion, they can be glazed with 1800 Steele's glaze. If the abutments are ground, the porcelain can be polished to bring out a glazed surface.

3. Remove the bridge.

4. Cement the Cerami crowns with any good cement such as Kryptex. Select a proper shade of cement to bring out the best coloring effects. Cement entire bridge in the mouth in the usual way, using an oxyphosphate of zinc cement of correct shade.

Procedure for Repair of Pontic—Retain the number and complete description of the Cerami crown selected and refer to this information if replacement is necessary. If the original crown was ground only slightly the replacement crown can be adapted in the mouth. If a great deal of grinding was necessary and porcelain was added to original crown, take a colloid impression of the area. Make a stone model and adapt the tooth to the model using the original technique. The design of this crown simplifies the entire procedure where replacement is necessary.

25 *East Washington Street*

The Ascertaining and Preservation of the VERTICAL DIMENSION

I. L. FAITH, D.D.S., Evansville, Indiana

DIGEST

The restoring and preservation of the correct vertical dimension is a phase of prosthetics that has not been accorded sufficient importance. Many sound theoretical articles have been written upon this subject. The purpose of this article is, therefore, to make a transition from the theoretical to the practical, thus incorporating knowledge of both phases into the finished denture technique.

Restoration of Lost Vertical Dimension

For esthetic reasons, or for physical or anatomic reasons, it is often necessary to restore lost vertical dimension. The Dento-profile scale is an important instrument in the armamentarium of the prosthodontist. By using measurements the loss of vertical dimension in edentulous patients can be corrected and the facial contours and dimensions of youth restored.

Use of Dento-profile Scale — The scale may be used in various ways:

1. Teeth can be constructed the same length as the natural teeth using the measurement that was recorded before extraction. This is done by transferring the measurements to the "bite plates" with the aid of the Dento-profile scale.

2. The rest position of the mandible can be ascertained, thus guarding against the risk of increasing the vertical dimension beyond the rest position. By comparing the rest position with the vertical dimension with the bite-rims in position it is possible to tell how much to close or open the articulator before setting up the teeth.

The trial and error method to determine how far anteriorly or posteriorly the anterior teeth should be placed cannot be improved.

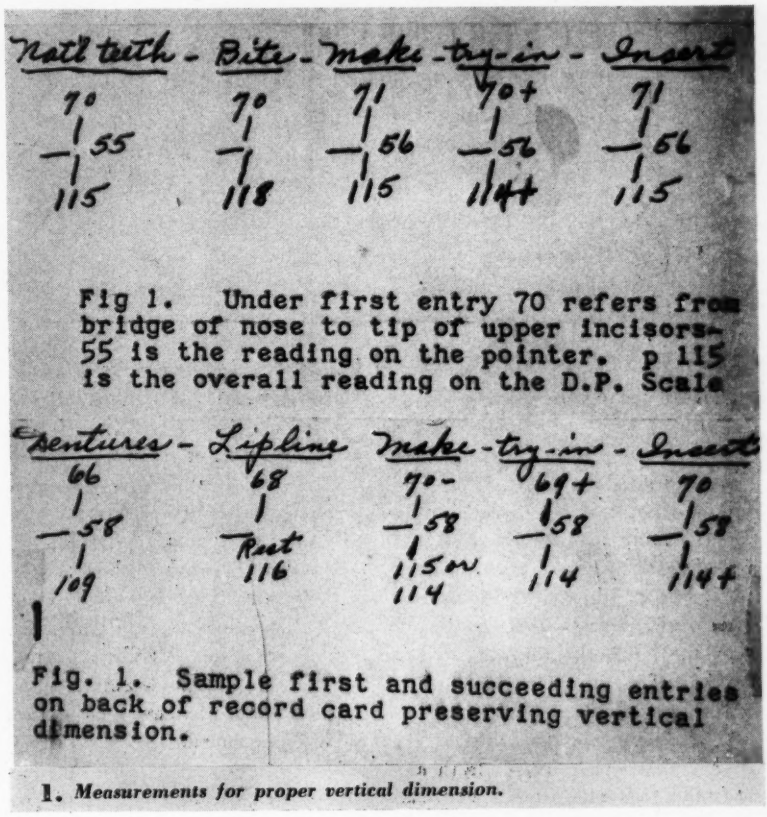
Objectives Determined—1. To preserve the natural vertical dimension, that is, the patient's vertical dimension before extraction.

2. Restoration of the natural vertical dimension in the edentulous patient when there is no record of a vertical dimension.

3. To determine the length of the teeth before their loss. This can be done if the patient has an old photograph showing the tips of the upper incisors.

Maintaining Vertical Dimension

If possible a reading should be taken of the natural teeth, especially the anterior teeth. Various devices have been used for this purpose but one recommended is the Dento-profile scale shown in Figure 2. The Dento-


Natl teeth - Bite - make - try-in - Insert
70 / 55 / 115
70 / 1 / 118
71 / 56 / 115
70+ / 56 / 114+
71 / 56 / 115
Fig 1. Under first entry 70 refers from bridge of nose to tip of upper incisors- 55 is the reading on the pointer. p 115 is the overall reading on the D.P. Scale
Dentures - Lipline - make - try-in - Insert
66 / 58 / 109
68 / Rest / 116
70- / 58 / 115 ow / 114
69+ / 58 / 114
70 / 58 / 114+
Fig. 1. Sample first and succeeding entries on back of record card preserving vertical dimension.

1. *Measurements for proper vertical dimension.*

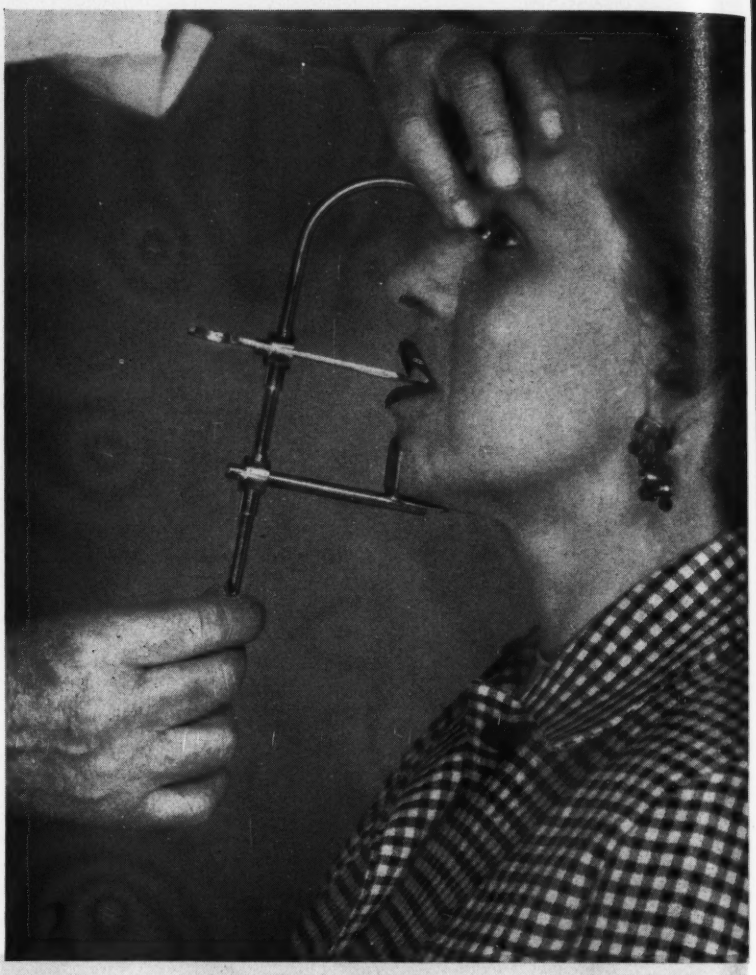
profile scale is graduated into millimeters.

Method of Use—1. A reading is taken having the patient close his mouth in centric relation, teeth clenched, upper lip raised.

2. Place the nosepiece of the Dento-profile scale in the farthest recess on the bridge of the nose with the point on the incisal edge of the upper central or centrals. At the same time place the chin rest of the Dento-profile scale upward and firmly against the chin.

3. See that all three are in proper contact, then remove (Fig. 2). Enter this reading on the record card (Fig. 1). Later, when the bite is taken, the pointer is made to register a mark on the bite-rim to correspond with the length of the teeth or with previous measurements.

Correcting Difference Between Overall Dimension and Bite Reading—When the bite is taken it may not correspond with the overall vertical dimension of the natural teeth. For example, if the patient's overall dimension is 115 millimeters with the natural teeth and the bite reading is 118 millimeters, the articulator should be closed 3 millimeters. If the bite is shorter than the vertical dimension of the natural teeth, add the difference (Fig. 1). By using the face-bow to mount the upper cast of the mouth, the articulator can be opened or closed without distortion.



2. *Shows Dento-profile scale in use.*

An Edentulous or an Old Denture Case

1. Have the patient open the mouth as wide as possible and hold this position one half minute or more.

2. Have the patient barely close the lips. In the majority of instances the patient's lower jaw will assume the "rest position."

3. A reading may be taken using the procedure described except that a reading of the contact point of the lips is taken instead of the incisal edges of the centrals. This is recorded under the designation "lip" and "rest" positions. This information is a guide in setting up the new denture.

4. The rest position should be rechecked. The upper incisor teeth are set from 1 to 2 millimeters lower than the lip line and the articulator is set so that the "setup" will be 1 to 3 millimeters within the bounds of the rest position.

To Determine Length of Teeth from a Photograph

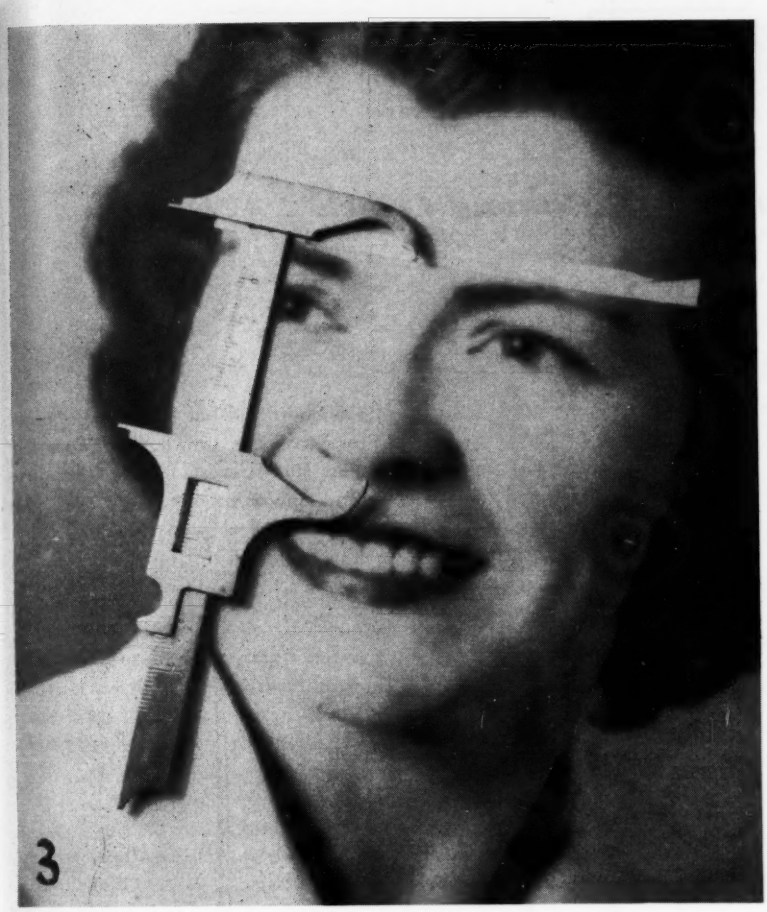
Sometimes it is desirable to ascertain what the length of the patient's natural teeth were before extraction. The following steps may be taken:

1. Secure a photograph of the patient, smiling enough to show the tips of the centrals, that was taken before loss of the natural teeth. If the picture is an enlargement, it will not be necessary to blow up the picture or negative, but if it is not, have a large print of the picture made.

2. Lightly attach a piece of adhesive or cellulose tape on the picture just above the eyebrows. Take a Boley millimeter gauge (Fig. 3) and measure in millimeters the distance between the mark, (that is, the tape) and the base of the nose. Take another measurement between the base of the nose to the tip of the teeth. The two measurements in this case were 31 millimeters and 12 millimeters respectively.

3. Using the millimeter gauge, take measurements of the patient's face in the same manner as that of the photograph from the eyebrow line to the base of the nose. As the patient is edentulous no measurements can be taken from the nose to teeth tips or the incisal edge of the teeth, although it is necessary to find this distance.

A previously prepared bite-rim or rims is, therefore, placed in the mouth



3. ***Method of determing vertical dimension from a photograph.***

and the newly found measurement is recorded on the bite-rim. To find this measurement is a problem in simple proportion, stated thus: the upper measurement of the picture is to the upper measurement of patient: as the lower measurement of picture is to the lower measurement of the patient: 31:65::12:x; or multiply the middle figures (12 x 65) and divide by 31 and the result is 25+ which is X or the proper distance to record on the bite-rim.

The width of the teeth can be obtained by the same method if conditions are correct. In this case a satisfactory comparison was made.

420 *Indiana Bank Building*

Intelligence and Cleft Palate

Survey Made of Group

The intelligence of children with congenital malformations, apart from those such as mongolism in which the brain is directly affected, has been little investigated. There is a clinical impression that mental defect is more common in some instances, but few direct measurements have been made. Two investigators of Sheffield, England[1] have recently made a survey of children with cleft palate all treated by the same plastic surgeon.

Classification of Age and Conditions—There were 112 in the original sample who had reached the age of four years. Of these 54 had hare lip and cleft palate and 58 the genetically distinct condition of cleft palate alone. The authors were able to test 61 of these children, 19 were tested by the local authorities, and 17 were not tested but school reports were available for them. No information was to be had on 15, of whom two had died.

Intelligence Ratings—The Terman-Merrill test was used both by the researchers and by the local authorities. The mean I.Q. was found to be 95.4, which was significantly different from the assumed mean of 100. Unfortunately no figures were available for the normal test score in Sheffield, and large regional variations in mean intelligence test score are known to exist. Of the 80 tested, however, three had an I.Q. below 50, five had an I.Q. between 50 and 70, and there were five with an I.Q. of over 120. No difference was found between the group with hare lip as well as cleft palate and those with cleft palate alone. The 17 on whom only school reports were available appeared if anything rather less intelligent than the main group.

Possible Explanation for Evident Trends—That there is a tendency for children with cleft palate to be below average intelligence was noted in an investigation done in Denmark where 59 instead of an expected 20 children with hare lip and cleft palate were present among 17,000 mentally defective children. In the present investigation two possible explanations were offered for the findings:

(1) The lower intelligence is due to the same factors, genetic and environmental, as are responsible for malformation.

(2) There will have been a tendency for independent genetic factors for the deformity and dull intellect to have become associated in the lower strata of society.

Preferred Theory—The second possible explanation suggested by the authors of this report is perhaps less probable since there appears to be no tendency for the two malformations to be more common in the lower social strata.

Adapted from *British Medical Journal* No. **5016**:454 (Feb. 23) 1957.

[1]Illingworth, R. S., and Birch, L. B., Arch. Dis. Ch.ldh. **31**:300, 1956.

Direct Impression for Cast Richmond Crown

Using ACETATE CROWN FORMS

NICHOLAS C. DEMAS, D.M.D., D.D.S., New York

DIGEST

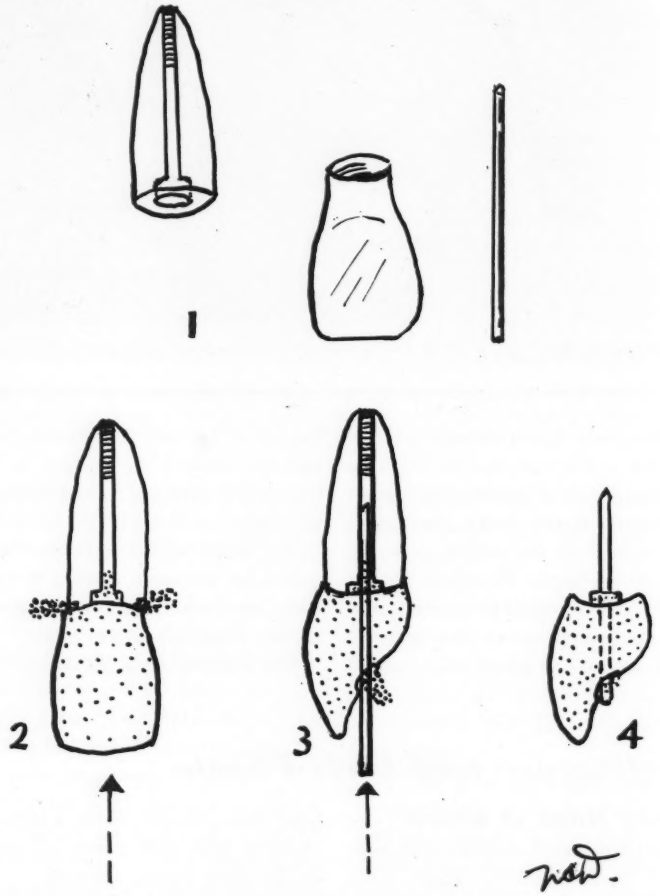
Acetate cellulose is a material that can be eliminated in gold casting in the same manner as ordinary casting wax. This fact is the basic principle in a technique described in a previous article in the August 1955 issue of* DENTAL DIGEST[1]. *Since then the technique has become an important short cut that is definitely successful. In this article, the technique is carried a step further and describes the use of an acetate cellulose crown form in the construction of a cast veneer crown with a dowel post.

This technique gives a perfect direct impression of the root end, with band, base, crown, and post in accurate relationship, all in one operation at the chair. All soldering is eliminated. The final result is clean and easy to finish.

Early Technique

The original crown post for devitalized teeth was presented and demonstrated by T. W. Richmond about 1878 and still bears the name, "Richmond Crown." Until now a serious disadvantage of this kind of crown was the time consumed to make it, both at the dental chair and later in the laboratory.

Numerous Steps Employed—It required great skill to take an impression of the root end; in the laboratory several steps were required: (1) construct the band (ferrule), (2) make the base, (3) solder the post through the base, and (4) solder the backing to the base. When the base and crown were cast, the process was shortened but time was required to carve the crown, and complete other steps. Several careful operations were therefore necessary with the hazard at each step of overheating, cracking, or distortion.



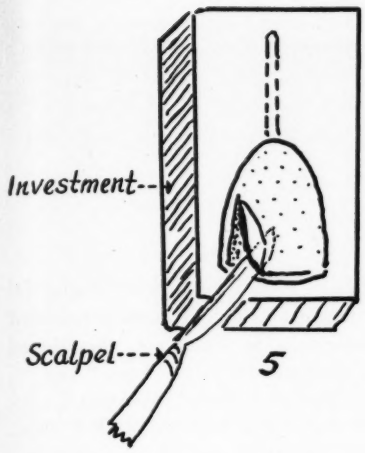
1. ***Shows the prepared root, the acetate cellulose crown form, and the metal dowel.***

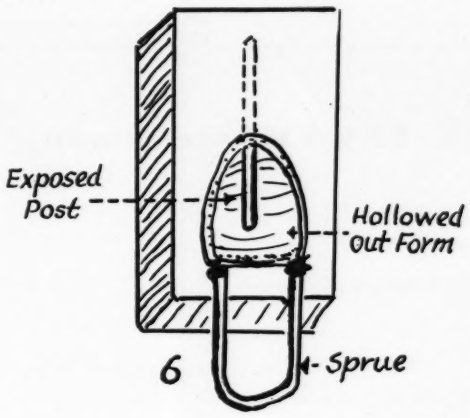
2. ***The crown form is trimmed, filled with inlay wax, and pushed on the preformed root.***

3. ***The warmed dowel is inserted through the hole in the lingual of the crown form and into the root canal.***

4. ***The crown form and post ready for investment.***

[1]*Demas, Nicholas C.: Acetate Crown Forms in Impression Taking and Casting of Gold Veneer Crowns,* DENTAL DIGEST **61**:350 (Aug.) 1955.





HCD

Time-Saving Technique

1. The devitalized and filled root is prepared for the crown and post in a standard manner, using any method familiar to the operator. It should be remembered that the final result must (1) seat accurately, (2) must not be subject to rotation, and (3) must not display unsightly gold on the labial aspect.

2. The root canal filling material is removed approximately 2/3 of the root length to allow room for the post.

3. Select an acetate crown form appropriate to the tooth in shape, size and contour. Using small scissors, trim it to fit the neck of the tooth snugly, below the free margin of the gum. This part of the crown will be the band and should be done carefully. The fact that the crown is stiff enough to manipulate and is transparent, allows this to be done surprisingly well (Fig. 1). Occlusion, appearance, and contact with neighboring teeth should be tested at this point.

4. Remove the crown form and perforate the lingual surface with a hole large enough to permit easy passage of the post to be inserted later. A round bur a little larger than the post may be used for this purpose. Set the form aside.

5. Select a post appropriate to the width of the root canal, either from one made from a straight piece of clasp wire, or a factory-made dowel. Its length should be about twice as long as the crown.

5. ***Shows the invested pattern and a scalpel used to cut out the labial of the crown form.***

6. ***Sprues attached, all the excess wax has been removed.***

7. ***Shows the proximal aspect of the one-piece casting. The labial portion is restored with self-processing acrylic.***

Taking the Impression

1. Fill the crown form with melted inlay wax and while still warm push into position on the root end, until it lines up properly with the other teeth. Excess wax will extrude through the lingual hole in the form or go into the root canal (Fig. 2).

2. Remove, and trim away excess wax from the lingual hole, around the collar and the portion that entered the root canal. Use a cold sharp instrument for this to avoid distortion of the impression. Examine for a clean, clear impression of the root end. This process may be repeated and corrected if necessary, by rewarming the wax, using a hot spatula in the center of the form.

3. Replace the crown form with its wax impression on the tooth. Sharpen the end of the post with a sandpaper disc. Heat the post. Insert it through the lingual hole of the crown form, through the wax and into the root canal of the tooth as far as previously decided (Fig. 3). Allow the post to cool. Remove and examine. Any excess wax that has flowed into the root canal with the warmed post will adhere to it, and may be left for a more perfect impression.

4. The crown and post are now ready for the first investment (Fig. 4). At this point additional wax may be added on the outside of the crown form for tighter contact with neighboring teeth, if necessary.

Investment

1. Carefully paint the post and base with investment material, then place into a mass of the still soft investment in such a way that it is entirely covered, except the labial surface of the crown form. Allow the mix to set.

2. With a sharp scalpel, cut out the entire labial surface of the crown form, exposing the inlay wax beneath. Be careful to allow about 1 millimeter of acetate at the gingiva to represent the band. This is the portion that slips under the free margin of the gingiva labially (Fig. 5).

3. Using a spoon excavator, scoop out all the wax in the crown form, except for the portion representing the base (about 1 millimeter thick). Expose the post that goes right through the crown, and carefully remove the wax behind it. Extra wax may be left where strength in the final casting is desired, such as at the incisal edge, or on proximal surfaces where soldering may be necessary if the crown is to be used for an abutment for a fixed bridge.

(*Continued on page* 264)

An INDIRECT INLAY *Technique*

LINUS C. FITZGERALD, D.D.S., Atherton, California

DIGEST

A recent technical development is a method of applying the investment to the wax pattern with the use of a spray gun. If carefully followed the technique illustrated in this article will produce gold inlay castings of the desired excellent quality.

Spray Gun is Used

A small bottle attached to a spray gun is filled one-half full with regular investment. One-third water is added to thin the investment so that it will readily pass through the gun when the air pressure is applied (Figs. 1, 2, and 3).

Procedural Steps

Step 1—The gingival margin should be properly bevelled with a suitable marginal trimmer (Fig. 4).

Step 2 — The occlusal margins should be bevelled with a cone on pointed stone (Figs. 5 and 6).

Step 3—After the cavity has been prepared, it is necessary to displace the tissue at the gingival margin (Fig. 7).

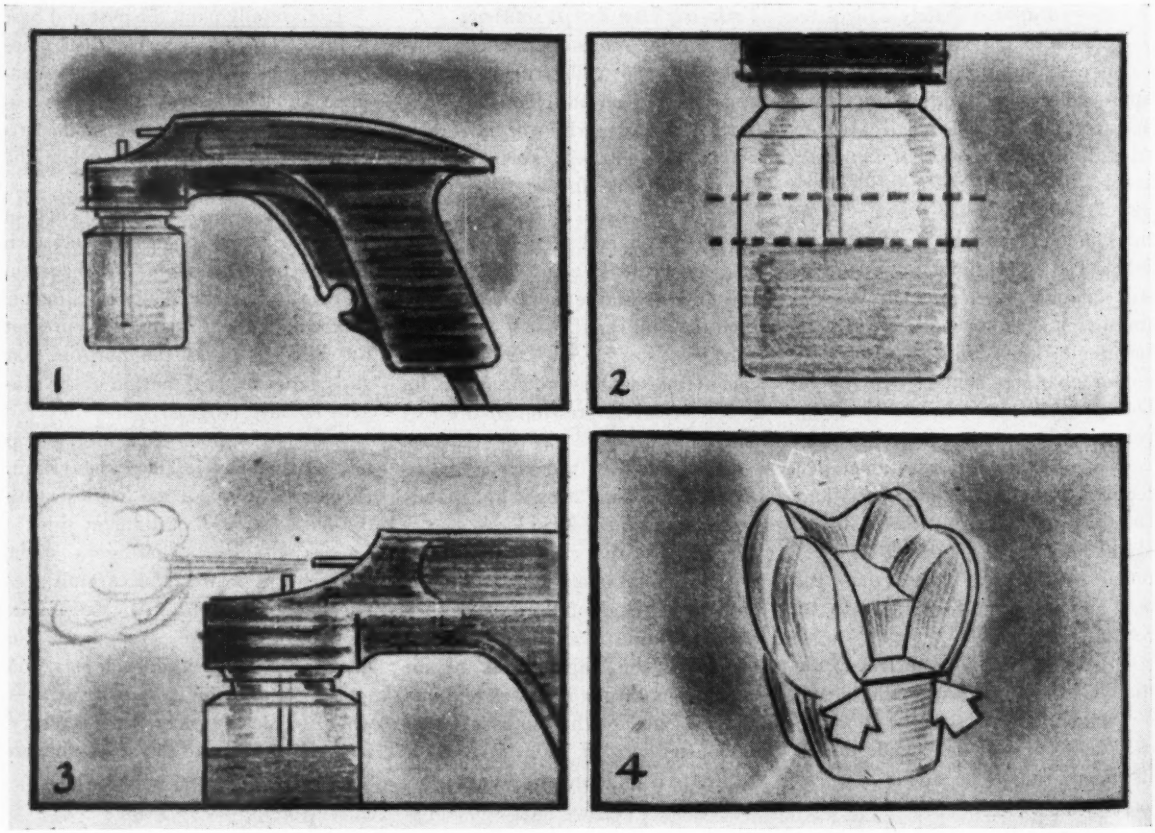
Step 4—Number 8 thread which has been soaked in a saturated solution of alum is packed in the gingival margin and a 1 per cent solution of adrenalin is placed on this thread with a pair of pliers (Figs. 8 and 9).

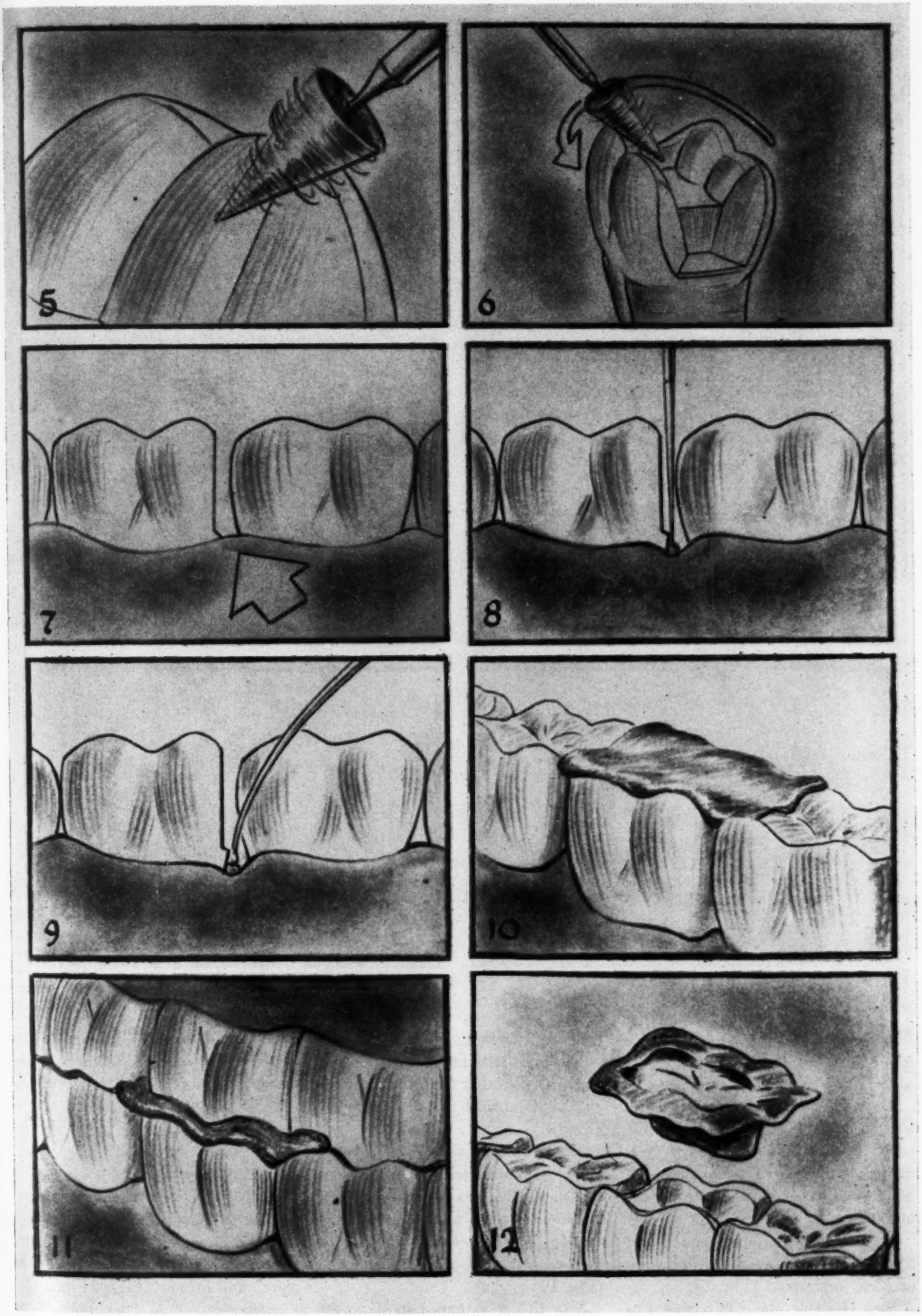
Step 5—Softened inlay wax is used to take a wax impression of a "chew-in" bite (Figs. 10, 11, and 12).

Step 6—The hydrocolloid conditioner is shown in Figure 13, A stainless body encloses three thermostatically controlled electric units which furnish even regulated heat to three water baths.

Step 7—The injection syringe injects an excess of hydrocolloid material in the interproximal space and over the occlusal surface of the adjacent teeth (Fig. 14).

Step 8 — The water-cooled tray

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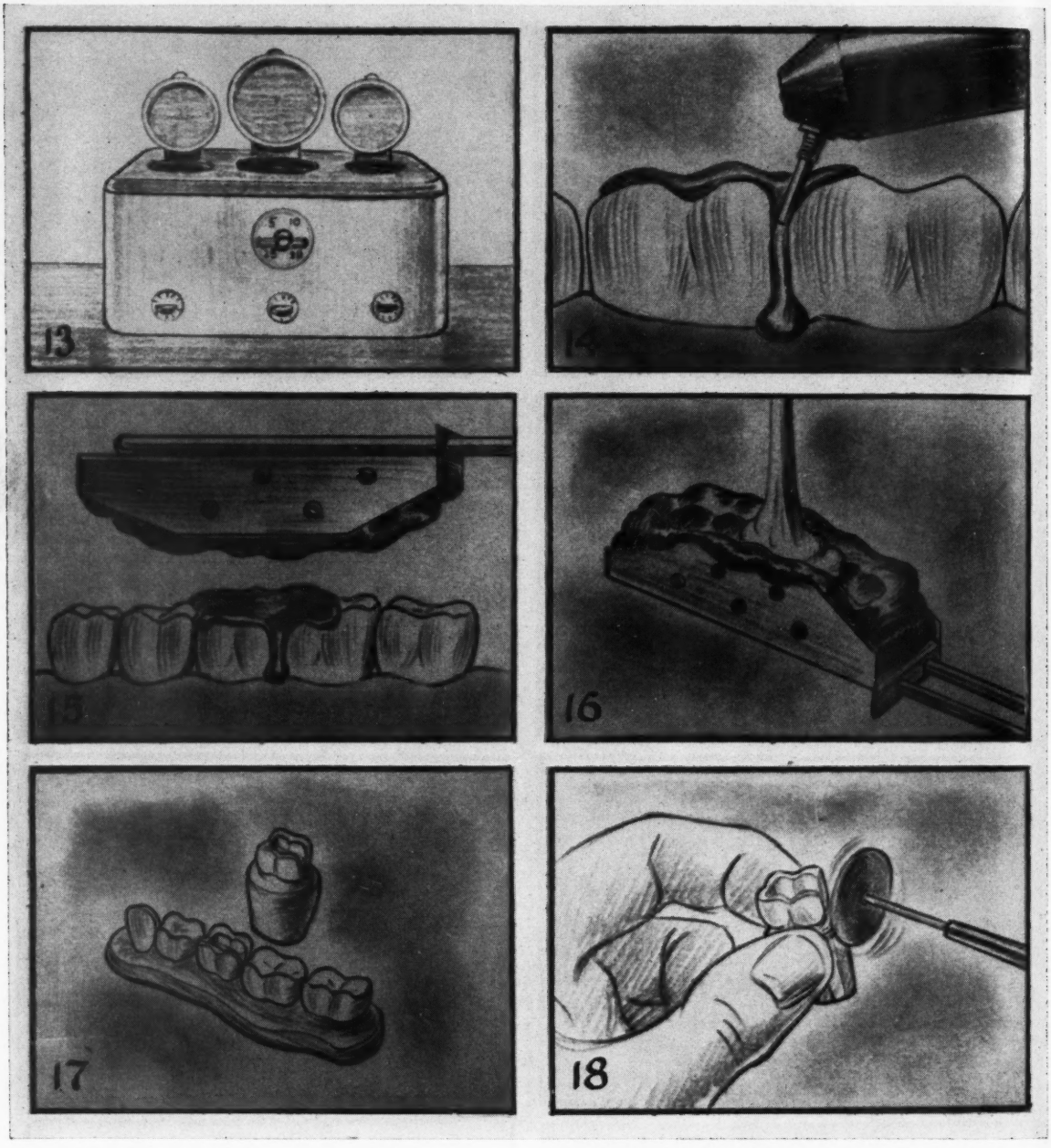


filled with the same hydrocolloid material is placed on and becomes a part of the injected material (Fig. 15).

Step 9—After the impression is removed, the one tooth involving the cavity preparation is poured to produce a single die. The stone should be allowed to set for at least 30 minutes (Fig. 16).

Step 10—The stone is removed and a second model is produced from the original impression (Fig. 17).

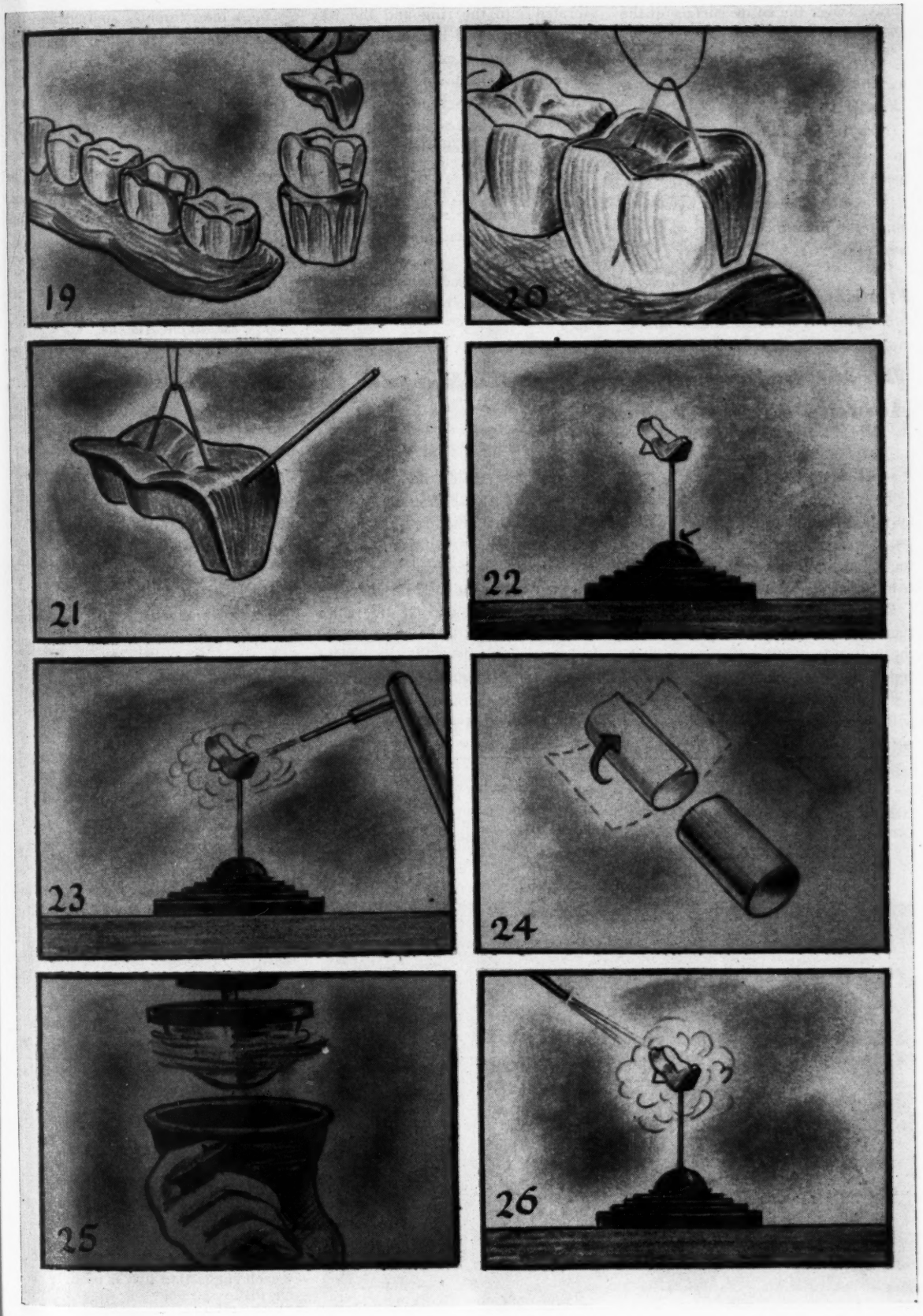
Step 11—One model is trimmed to produce a working model. The other is left intact to obtain the proper contact with the other teeth. Both models are now lubricated with microfilm (Fig. 18).

Step 12—The wax bite is transferred to the model. Occlusion is established. The wax bite is placed on the second model to establish proper contact. The bite is returned to the original model to establish margins (Fig. 19).

Step 13—A V-shaped staple of 29-gauge gold wire, slightly heated, is placed on the occlusal of the wax pattern, the wax pattern is gently removed from the die by a small thread passed through the V. The gold wire remains until after the casting is made (Fig. 20).

Step 14—The pattern is sprued with a hollow sprue wire and mounted on a rubber crucible former and sealed with sticky wax at the joint of sprue and former (Figs. 21 and 22).

Step 15 — A "debubblizer" is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sprayed over the entire surface of the wax pattern (Fig. 23).

Step 16—A casting ring is prepared by lining the ring with wet asbestos (Fig. 24).

Step 17—The investment is placed in a rubber bowl and mixed with a mechanical mixer (Fig. 25).

Step 18—The spray gun is used to apply the investment to the wax pattern (Fig. 26).

Final Steps

1. The original investment mix is vibrated into the ring and the wax pattern is dropped into position.

2. The ring is placed in a 100° Fahrenheit bath for thirty minutes.

3. The sprue is removed and the ring is placed in a preheated thermostatically controlled burn-out oven and held at 875° Fahrenheit for a minimum of thirty minutes.

4. The casting ring is removed from the furnace and placed in a casting machine.

5. Properly sized gold ingot is placed in the crucible of the casting ring.

6. A blow torch is applied and the gold is melted. The inlay is removed from the casting ring.

Comment

Dentists who use the standardized hydrocolloid indirect technique outlined here have been gratified at the accuracy of fit of the inlays, bridges, and complex multiple restorations produced with a minimum of adjustment.

7 *West Maple Avenue*

Direct Impression for Cast Richmond Crown Using Acetate Crown Forms

(*Continued from page* 259)

Final Investment

1. A single thick sprue or a double sprue (which can be made from a paper clip) may be used. This is attached at the incisal edge of the form using sticky wax (Fig. 6).

2. Soak the pattern thoroughly, then paint all exposed portions of the pattern with investment material, finish investing, and cast.

Final Casting—The final casting will be as accurate as any direct inlay. The post should be notched or serrated with a carborundum disc for better retention (Fig. 7). The veneer facing may be added using acrylic of the appropriate shade. Because of the extra bulk that may be added to such a hollow crown, a better color will result without the fear of a gold shadow beneath.

Retention Provided—The solid post running through the crown provides excellent retention to the acrylic veneer, making it impossible for it ever to be dislodged. The final finishing and polishing can be done easily with a minimum loss of material or time.

Conclusion

The advantages of this technique as stated previously are speed, accuracy, safety, and economy of material.

271 *West 27th Street*

CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 268 *and* 269)

Form to be Used by Contributors
To: Clinical and Laboratory Suggestions Editor

DENTAL DIGEST
708 Church Street
Evanston, Illinois

From: _____

_____

_____

Subject: _____

Sketch:

Explanation of Procedure:

Suggestions submitted cannot be acknowledged or returned.
$10 will be paid on publication for each suggestion that is used.

Simplified EXTRAORAL RADIOGRAPHY

of the Maxillary and Mandibular Molar Area

JACK PERLOW, B.S., D.D.S., Flushing, New York

DIGEST

Roentgenology is a subject that receives thorough academic treatment in the modern dental school. In the practical phases of teaching insufficient time is devoted to extraoral radiography, and the greatest emphasis is placed on the intraoral aspect. This is unfortunate as extraoral x-rays have a singular position in clinical dentistry, particularly lateral jaw radiography of the maxillary and mandibular molar areas. It is only in exceptional cases, however, that the dentist will resort to these invaluable records.

This article presents a standardized technique for taking extraoral x-rays which is simple, precise, and economical. The technique can be used routinely at the time intraoral x-rays are taken. In most cases, where bite films or interproximal films are used, the four molar periapical films can be dispensed with.

Advantages of Extraoral Radiographs

Lateral extraoral radiographs can be invaluable to the dentist in a number of ways:

1. In supplementing the findings obtained from periapical films by providing a more extensive area for examination.

2. Lateral views of the mandible and maxillae in such conditions as dento-facial injury, pathologic diseases of bone, and presence of foreign bodies are indispensable. They also offer significant data regarding anomalies of growth of the jaws and the deciduous and permanent dentition.

3. Treatment planning and prognosis of surgical procedures would be illimitably enhanced by extraoral views.

4. In many cases, it is difficult to obtain good periapical views. Gagging, tender tissues, movement, and the youth of the patient may prevent the securing of satisfactory films. By means of the extraoral approach, these difficulties are eliminated.

General Considerations

At one time, it was decided to construct a fixator[1] for portable attachment to a dental chair to secure standardized and equivalent views of the right and left molar areas of the jaws on one 5 by 7-inch film. This was found unnecessary for the following reasons:

1. The results obtained by other simple means which will be subsequently described made it doubtful that a fixator could improve on the quality of these films.

2. In the time ordinarily required to adjust the fixator to the dental chair, these films can be taken.

3. The expense of constructing the fixator.

Innovations—A few simple innovations are employed (Fig. 1):

1. Several fixed anatomic points are marked with an eyebrow pencil on the right and left sides of the patient's face: Point (A) The extreme distal ends of the eyebrows (supraorbital ridges). (B) The superior edges of the right and left ears (auricles). (C) The tragus of the auricle.

[1]Perlow, Jack: A Portable Cephalometer for General Dentistry, DENTAL DIGEST **60**:440-453 (October) 1954.

1. *Points A, B, and C.*

2. Fixed angles of the x-ray cone and the head of the x-ray are applied.

Improved Results—1. The resultant pictures are almost an exact duplication of the right and left sides.

2. The upper teeth are as clearly discernible as the lower teeth.

3. The images of the molar teeth are distinct with no overlapping. Four views of the molar areas of the jaws are thus provided.

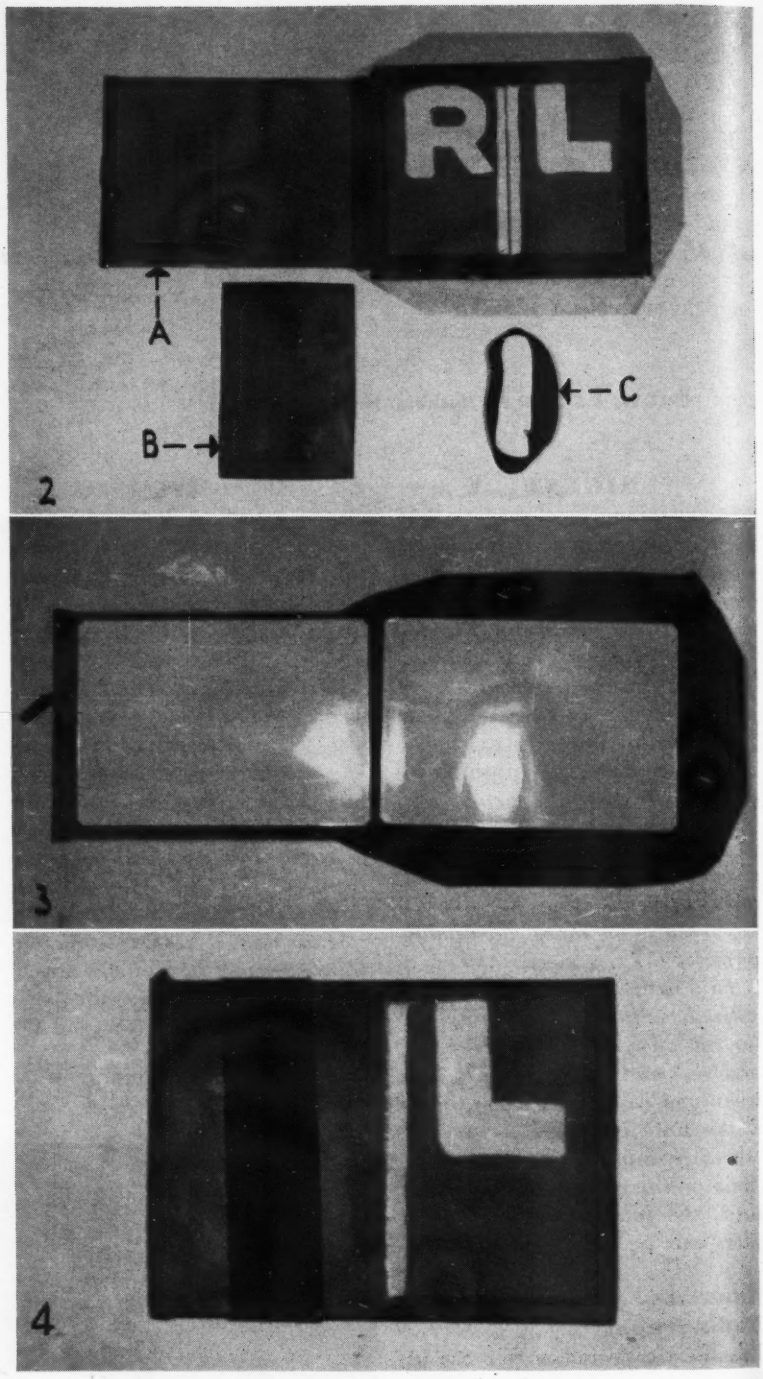
4. Cost per view is three cents and less than the cost of a periapical film. X-ray exposure is 1/16 second per view which is a benefit as there is much less radioactivity concerned than in a similar periapical film.

Technical Description

A 5 by 7-inch Kodak X-ray Exposure Holder is reinforced with ½-inch Mystik tape. All folded edges are covered with the tape (Fig. 2). A pair of 5 by 7-inch AAA High Speed Intensifying screens (Buck) is cemented to the inner surfaces of the cardboard leaves of the holder. It is best to follow closely the simple instructions of the manufacturer in cementing these intensifying screens (Fig. 3). The primary objective in using screens on the exposure holders is to secure an overall reduction in weight; making them much lighter than metal cassettes. Because of this lighter weight, no movement of the patient occurs. Blurring of the film is thus eliminated. The exposure time is ¼ second for these high speed screens.

Left and Right Exposures—A piece of lead rubber 3½ by 5 inches (obtainable in a medical supply house) is used to cover exactly one-half of the 5 by 7-inch holder. A piece of black garter elastic 1 inch wide and 8½ inches long is sewn together. This elastic serves to hold the lead rubber to one-half of the Exposure Holder marked R, leaving the opposite half to be exposed to the x-rays marked L. After L is exposed the lead rubber is shifted by sliding with elastic to L leaving R free to be exposed. When shifting from L to R always keep letters *up* so that both views will be exactly matched.

Simple Method of Orientation—Although a lead letter R or L can be placed on the tube side of the Exposure Holder as a means of orientation, this has been found unnecessary. Marking in white paint R and L on the Holder is easily discerned at the time the film is removed in the darkroom and mounted on a film hanger. In our office one of the corners of the R side is always bent.



2. ***A plastic piece for identification information. (B) Lead rubber. (C) Black elastic.***
3. ***Shows intensifying screens cemented to holder.***
4. ***Holder ready for exposing left half of 5 by 7-inch plate.***

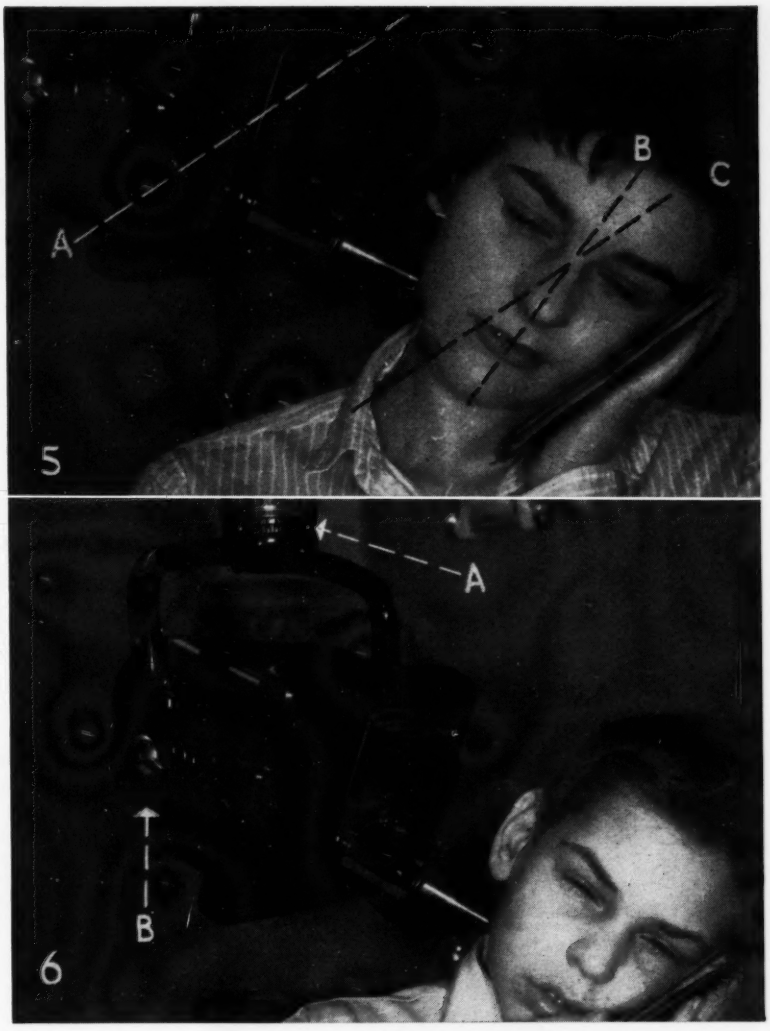
Additional Identification—As more than one holder may be used, additional identification data can be obtained by cementing with DuPont Duco cement a thin piece of clear plastic. The name and date can be written on the plastic with the eyebrow pencil and later easily wiped off. All pertinent data can be transferred on the dry x-ray film to indicate R and L sides, name, date, age with a Scripto or a Magic Marker pencil (red). Special printers or plates for identification are available for purchase. These are costly, however, and it is time consuming to assemble the necessary letters and numerals.

Procedures

Position of Patient—The head rest is moved out of position, and the patient is placed so that the chin is brought in and an imaginary line from the tragus of the ear to the ala of the nose is parallel to the floor (Fig. 1).

Method for Taking X-ray of Left Maxillary and Mandibular Molar Areas—1. Cover the R half of the Exposure Holder with the lead rubber which is held in place with the black elastic band (Fig. 4). The horizontal edge of the holder must coincide with the imaginary line from the point A to B and the vertical edge with C.

2. With the flat part of the band the patient retains the holder against the face while balancing with the opposite hand. The patient's head is bent 45 degrees to the left.



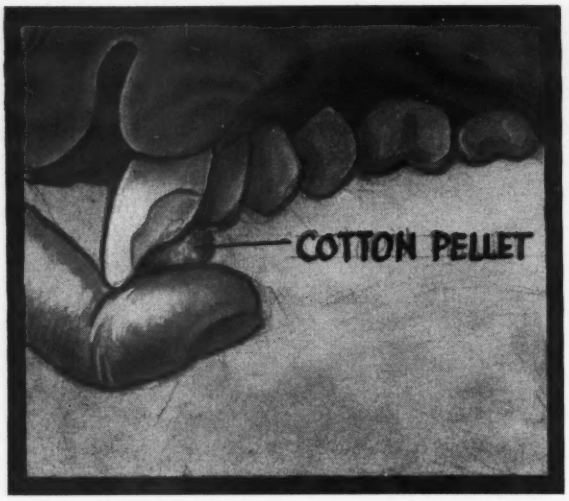
5. ***The face of the x-ray head is parallel to plane C by turning the head 20 degrees away from sagittal plane B. This permits the central ray to be perpendicular to the maxillary and mandibulary areas of the opposite jaws.***
6. ***(A) Angle scale for head of x-ray turned 20 degrees outward. (B) Angle scale for cone plus 25 degrees at gonion.***

3. The x-ray machine is then placed in position with the point of the cone at plus 25 degrees (Cone Angulation) and the long face of the x-ray head parallel to the side of the patient's face. The point of the cone is at the right angle of the body of the mandible (gonion) (Fig. 5).

The head of the x-ray machine is then turned 20 degrees away from the parallel to the right side of the patient's face. The Cone Angulation is still kept at plus 25 degrees at the

(*Continued on page* 284)

7. ***Typical x-rays made by this method.***



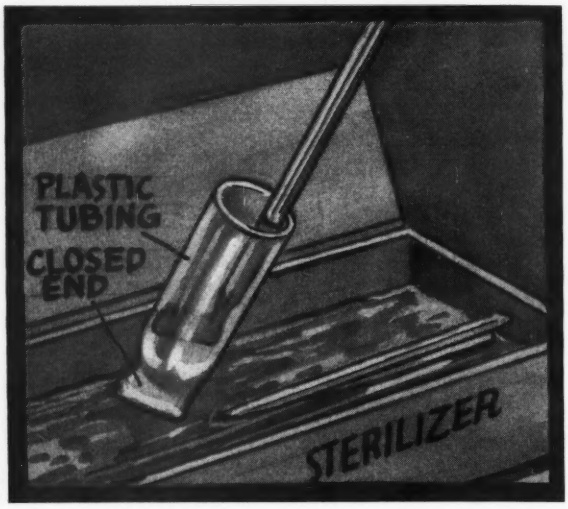
1

Clinical and Laborato

Obtaining Proper Lingual Contour

S. Earle Wardlaw, D.D.S., Anderson, South Carolina

1. Insert the silicate and use a celluloid strip. Then press a piece of cotton against the lingual surface with finger pressure. This produces a proper lingual contour.



2

Protecting Cutting Edges of Instruments

T. J. Doyle, D.D.S., Eagle River, Wisconsin

2. Use a 1-inch length of quarter-inch plastic tubing. Heat one end and pinch together with pliers. When this casing is slipped over the cutting edge of the instrument it affords good protection of the sharp edges during sterilization.

3

Easier Removal of Celluloid Wedges

Daniel L. Bartell, D.D.S., Tonawanda, New York

3. Use a bur or disc to make an indentation on the wedge. This groove affords a good place to grasp with an instrument when the wedge is removed.

READERS *are Urged to Collect $10.00*

For every practical clinical or laboratory suggestion that is usable, DENTAL DIGEST will pay $10. on publication.

You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

SUGGESTIONS . . .

Sore-spot Indicator Paste

Stewart M. Johnson, D.D.S., Pittsburgh

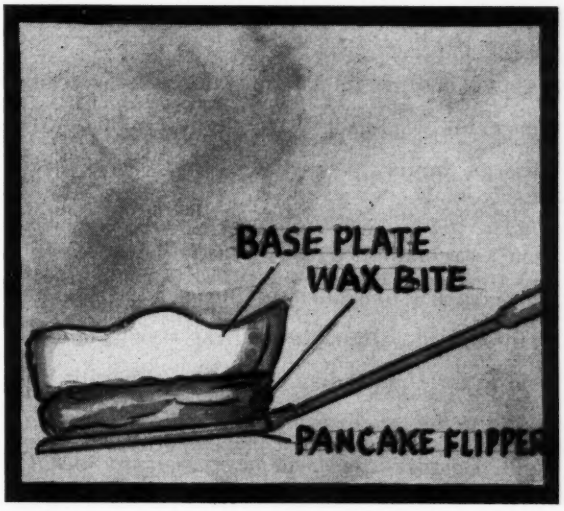
4. Make a paste of zinc oxide and water and to this add a small amount of alcohol. Dry the tissue and put a small part of the paste on the sore spot. Insert denture. The paste will not spread in the saliva and will be transferred to the denture on the exact spot that requires relief.

4

Establishment of a Level Plane on a Bite Block

Steven G. Schaffer, D.D.S., Limestone, Maine

5. A heated pancake flapper makes an ideal instrument to use for establishing a level plane on a bite block.

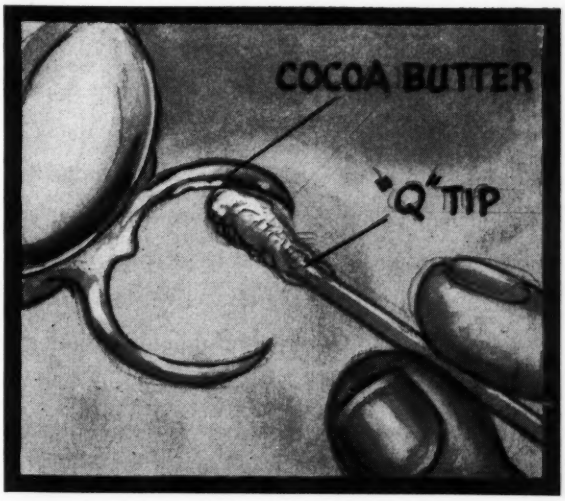


5

Aid to Insertion of New Partial

Edwin T. Coleman, D.D.S., Knoxville, Tennessee

6. Apply cocoa butter or Vaseline® to the clasps of a new partial denture before the try-in. The lubricant aids in insertion and removal of the clasps on the teeth.



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technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 264 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

The EDITOR'S *Page*

EVERY DENTIST in the Commonwealth of Pennsylvania is now required to register his x-ray machine with the Department of Health. The purpose of this order is "to learn of and locate all sources of radiation, so that, when necessary, protective measures against excessive radiation may be taken." Exactly what these "protective measures" may be has not been stated.

For more than 40 years the x-ray has been used in dental diagnosis. For the past 25 years the apparatus has been perfected to such degree that x-ray burns or accidents to patients are virtually unknown. The dentist who is careless in his technique or stands in direct line of the primary rays, or holds films in his own fingers during exposure, may suffer radiation injury.

The two known hazards to the x-ray operator from x-ray radiation are: leukemia and sterility. The incidence of leukemia among dentists has not been studied, although medical roentgenologists seem to have more than physicians generally. The danger to the reproductive organs of dentists seems slight. Dentists appear to have as many children and as normal children as the rest of the population.

The order of the Pennsylvania Department of Health represents part of the present confusion covering the entire field of radiation energy. We are told in some quarters that fall-out from the experimental use of atomic and hydrogen weapons is negligible and of no serious concern to health. On the other hand, dour prophecies are made that tell us that the future of mankind is in jeopardy from fall-out and that the use of radioactive elements and isotopes in war and in the peaceful fields of biology, industry, and agriculture endangers the survival of the race.

It is certainly commendable that a State Health Department recognize the inherent dangers of the cumulative effects of all these powerful forces in the Atomic Age. The history of the past quarter-century would suggest that the dental x-ray machine is not a lethal weapon in itself and that, when used for routine diagnostic purposes, it does not endanger the health of patients or dentists. We do not know what the cumulative effects of x-rays *plus* those radioactive energies from cosmic and man-made sources may be.

A dental consultant to the Pennsylvania Department of Health has written:

"Since World War II, the construction of reactors with their attendant by-products resulting, radioactive elements or isotopes have become available for use in research in the diagnosis and treatment of diseases, industrial uses, and sterilization of food. There are now 300 users of isotopes in Pennsylvania. Most of these users handle their radioactive materials with great care and the amount of radiation is small and by itself can almost be disregarded. However, added to this, man-made radiation exposure from the peaceful use of atomic energy, although relatively small and the radiation resulting from its beneficial use by the healing arts groups, all these exposures add up and are cumulative. We do know that high radiation exposures are harmful but what we don't know is the effect of small and medium doses, and at what level strain results."[1]

Because of this present paucity in knowledge on the subject it would be regrettable if the public were panicked and made fearful of having diagnostic x-rays made to discover early and life-endangering disease—as well of disease of the dental tissues.

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[1]Aston, Edward R.: Dental Aspects of Radiation, Pennsylvania D. J. **24**:2 (March) 1957.

MEDICINE and the Biologic Sciences

Hodgkin's Disease

Hodgkin's disease begins in the peripheral lymph nodes in about 75 per cent of the cases. Eventually superficial nodes are almost always involved. The most frequent internal sites of invasion are the mediastinal and abdominal nodes, lungs, and spleen.

The only symptom may be enlargement of the lymph nodes. Occasionally the following symptoms may also occur: (1) weakness, (2) fever, (3) anorexia, (4) nausea and vomiting, (5) weight loss, and (6) pruritis. Sometimes bone marrow studies reveal multiple granulomas.

Microscopic examination of enlarged lymph nodes may reveal an increase of the reticulum and lymphoid cells, multinucleated Sternberg-Reed cells, fibrotic or necrotic areas, and eosinophilia. Prognostication on the basis of granulomatous or sarcomatous types of lesions in the biopsy specimen is difficult.

Survival figures of persons with Hodgkin's disease correlate more closely with the clinical stage of the disease than with the histopathologic condition or any other factor.

There are roughly three stages of the disease. Stage 1 is a single group of lymph nodes, or a single lesion elsewhere is involved and the patient does not have constitutional symptoms. In stage 2 at least two proximal lymph node regions or either upper or lower trunk are affected with or without constitutional symptoms. In stage 3, the disease has progressed to include multiple groups of nodes and may or may not cause symptoms. Or, the disease is acute but without obvious lymphatic involvement.

Intensive irradiation is used alone or immediately after surgical excision for treatment of the disease in stage 1. Intensive irradiation is also the best procedure for stage 2 lesions.

At least 2,000 tissue roentgens are delivered to the tumor within fourteen days. The dosage, however, is individualized; large masses may require heavier amounts. If any node in a lymphatic chain is involved, the complete chain is included in the radiation field. To assure adequate dosage tolerance in diseased regions, prophylactic irradiation to possible future disease sites is not given.

Less intense therapy is administered to ameliorate symptoms of patients with stage 3 disease. Spray irradiation is occasionally used for widespread involvement. Nitrogen mustard or triethylene-melamine (TEM) may be valuable adjuncts for patients with advanced disease.

In general, the ten-year survival figures are 77 per cent for patients with stage 1 disease, 35 per cent for those with stage 2 disease and 2 per cent for persons with stage 3 disease.

Nice, Charles M., and Stenstrom, K. Wilhelm: Irradiation Therapy in Hodgkin's Disease, Radiology **62**:641-651 (*July*) 1954.

Heart Disease in the Aged

The most common type of heart disease in the aged is that caused by atherosclerosis of the coronary arteries. Atherosclerosis is one of the major unsolved problems of medicine today. It is the subject of much intensive investigation.

There is now general agreement that atherosclerosis is abnormal and pathologic. It is a disease and not a normal change or accompaniment of advancing years.

Studies indicate that the development of atherosclerosis is favored and hastened by elevation of the plasma cholesterol level or by alterations of the plasma lipids. The presence of estrogenic hormones retard or inhibit its development. There is evidence that the process is reversible, both in the experimental animal and in man. As yet, however, there is no practical means of preventing or reversing the process.

In order to reduce elevated plasma cholesterol levels, the diet must be so low in fats that it is not practicable and men are not likely to accept estrogen therapy.

Coronary arteriosclerotic heart disease may manifest itself in any of several was such as: (1) angina pectoris, (2) coronary insufficiency, (3) myocardial infarction, (4) various arrhythmias, and (5) congestive cardiac failure. Congestive cardiac failure is usually of the left ventricular type in the beginning, followed in time by failure of the right ventricular type in addition. The fully developed picture is readily recognized as cardiac failure.

The treatment of congestive cardiac failure in the aged includes rest, digitalis, and diuretic measures. Strict confinement to bed is not well tolerated by the aged and should be modified if possible to include periods of rest in a chair. Older people may be unusually susceptible to digitalis and may develop arrhythmias and nausea which in younger people give warning of overdigitalization, so that the employment of this drug calls for close supervision. Because the elderly commonly have some impairment of renal function, vigorous diuresis may lead to alterations in electrolyte balance.

Angina pectoris must usually be diagnosed from the history of substernal pain, sometimes with radiation to the left shoulder and arm or to the left side of the neck, brought on by

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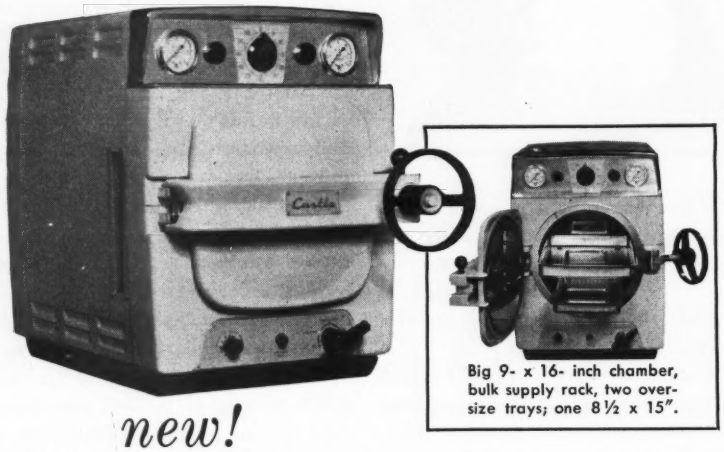

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exertion such as walking and relieved promptly by rest. Clinical examination of the heart may or may not disclose any abnormal findings and does not contribute importantly to the diagnosis.

Coronary insufficiency is a term applied to a degree of coronary narrowing more severe than that of angina pectoris. The pain is similar in location, but more prolonged and not relieved by rest or nitroglycerine.

Older people with circulatory disorders sometimes have other diseases which influence the progress of the circulatory condition. Elderly people with heart disease and especially those with angina pectoris or aortic stenosis are poor risks for surgery.

Barker, Paul S.: Circulatory Diseases of Old Age, J. Michigan M. Soc. **54**:556-559 (May) 1955.

Dyspnea

Occasionally the dental practitioner may be faced with the problem of dyspnea in a patient upon whom he is working. Frequently the mechanisms of dyspnea are multiple and interrelated. Acute attacks can often be prevented or aborted by therapy that is directed at one of several points.

Restrictive disease of the lungs may result from loss of functioning pulmonary tissue with a static reduction of all components of the lung volume, including vital capacity. On the other hand, obstructive disease causes difficulty or delay in moving air out of the lungs.

In many pulmonary diseases with increased residual air volume, the mixing of gases is so impaired that the oxygen tension in the alveolar spaces is reduced. The same condition occurs if the oxygen tension in the arterial blood is reduced by an admixture of blood that has perfused nonaerated portions of the lungs.

As cardiac reserve lessens with congestive failure, the upper limit of cardiac output diminishes until the greatest blood flow is produced at rest. With effort, therefore, no in-

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1. Fitzgerald, G.: Dent. Digest *62*:494 (Nov.) 1956.

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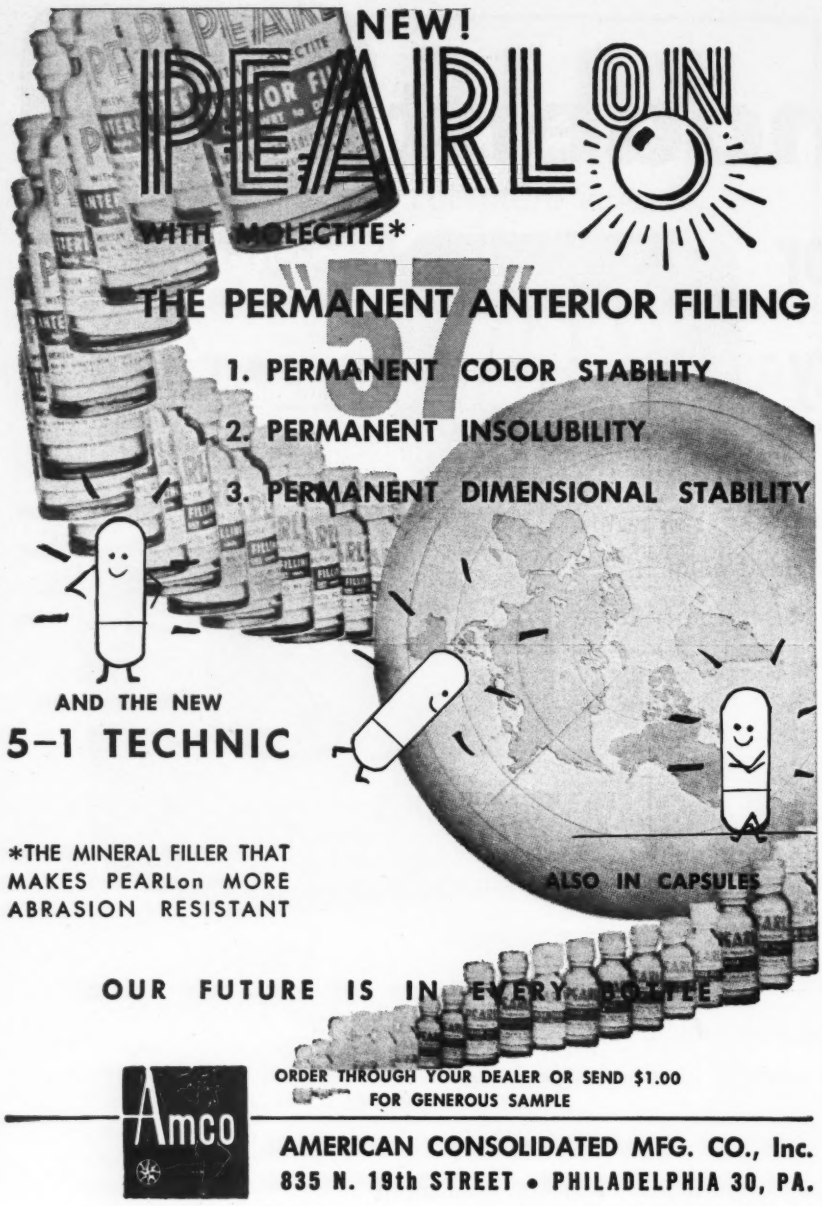


crease in blood oxygenation is possible. Venous anoxia results with a subsequent increase of respiratory rate.

Anoxia also occurs in the respiratory muscles which fatigue easily. Cardiac patients with diminished reserve tend to hyperventilate upon exercise but less than patients with primary pulmonary disease.

Disturbances in pulmonary circulation occur with hypertension and passive congestion; the distensibility of the lungs is altered and the work of breathing increased. The pulmonary air spaces are encroached upon with resultant restrictive and obstructive interference with ventilatory function. Stiffening of the lung tissue initiates the expiratory phase of respiration earlier and causes shallow and rapid breathing which is distressingly inefficient.

Anoxia, a stimulus to increased respiratory rate and volume, can result from a right-left shunt with congenital heart disease or from impairment of oxygenation of the lungs. Anemia also causes a deficiency of the oxygen-carrying power of the blood, adding to the burden of the failing heart.

Hypercapnia or elevated blood carbon dioxide is a respiratory stimulus commonly found in patients with severe obstructive disease of the lungs, especially when interference with mixing and distribution of gases coexist. Patients with chronic hypercapnia may be relatively insensitive to carbon-dioxide stimulus and depend on anoxia for respiratory drive. High oxygen mixtures should not be administered for prolonged periods because of the possibility of depressing respiration.

Also it is believed that consciousness of breathing and disturbances of respiratory rhythm are among the most common manifestations of anxiety neurosis and neurocirculatory asthenia.

Ellis, Laurence B.: The Differentiation between Cardiac and Pulmonary Dyspnea, Bull. New England M. Center **16**:115-119 (*August*) 1954.

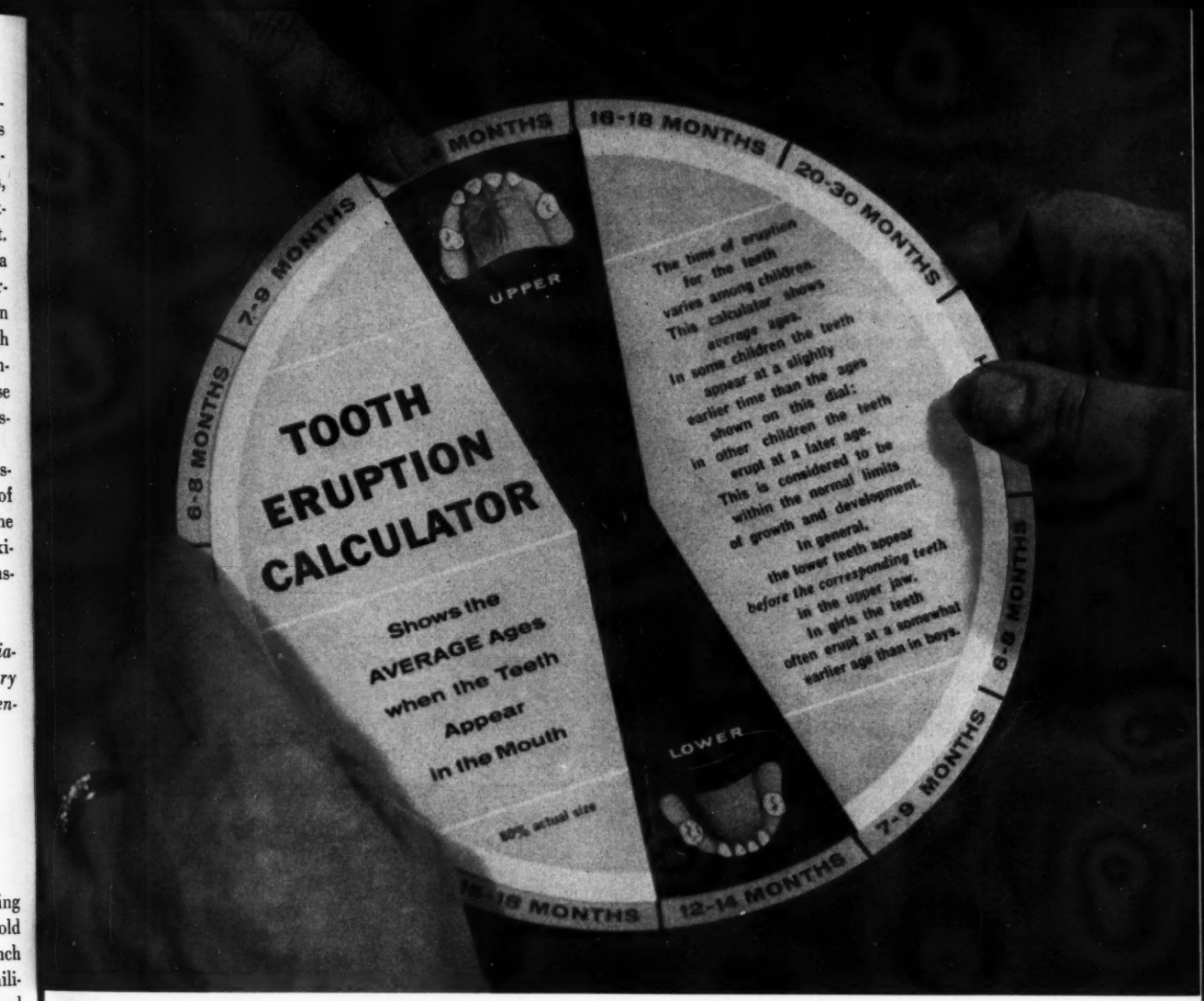
Injuries from Cold

The primary conditions resulting from exposure of an extremity to cold are frostbite and trench foot. Trench foot is almost never seen in nonmilitary patients except as an occasional complication of frostbite.

Frostbite is tissue necrosis produced by cold of cytotoxic intensity. Impairment of sensorium by alcohol or by cerebral arteriosclerosis is a frequent contributing factor. The severity of the condition is determined by the following factors: (1) intensity of cold, (2) duration of exposure, (3) protection of the part, (4) air movement, (5) vascular supply to the extremity, and (8) general physical status of the patient.

Vasospasm is not a significant factor after the area is thawed. Cellular necrosis is noted immediately after injury. Subsequent changes are caused by mummification of dead tissue, not delayed gangrene.

Rapid thawing is essential. The extremity is immersed in water slightly above body temperature. After thawing is complete the extremity is dried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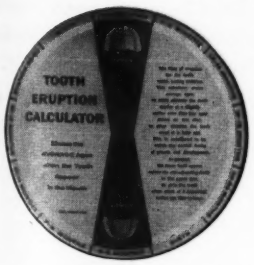
What Every Parent Should Know—

about his child's teeth



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Every dentist and physician will also want the TOOTH ERUPTION CALCULATOR to give to parents for home-use and patient education.

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thoroughly and coated with an antibiotic spray. No dressings are used, and petroleum jelly and other greases are dangerous.

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The area of gangrenous tissue is defined about one month after injury. A well-marked zone of suppuration divides viable and dead tissue. Muscle, bone, and nerve are more susceptible to cold and are affected at a higher level than the skin.

Debridement is performed by dissecting along the line of demarcation with scissors and dividing the bone with a rongeur. Only slight anesthesia or none is used. When an amputation is necessary, the skin flaps, if viable, are closed over the hollow, conized stump. Areas not covered by skin are allowed to granulate, and grafts are applied about a week later.

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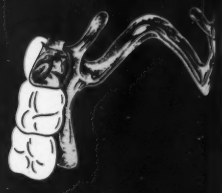

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Trench or immersion foot is produced by exposure to sublethal cold. Water slightly below the freezing point is the usual cause. Capillary injury and thrombosis result. Pain and vasospasm occur after removal from cold. Coolness rubor perspiration, and a sensation of burning are the usual manifestations.

Initial therapy consists of elevation and cooling. Water is sprayed on the feet with an atomizer and allowed to evaporate. After the acute phase of the condition, wool socks are necessary and the feet are kept clean with G-11 soap. Symptoms usually subside after a month. Adrenergic or sympathetic ganglion blocking drugs are used during the period of vasospasm. Sympathectomy is necessary in occasional instances when spasm persists.

Kleitsch, W. P., and Connors, E. K.: Cold Injury of the Extremities, Postgrad. Med. **16**:191-200 (August) 1954.

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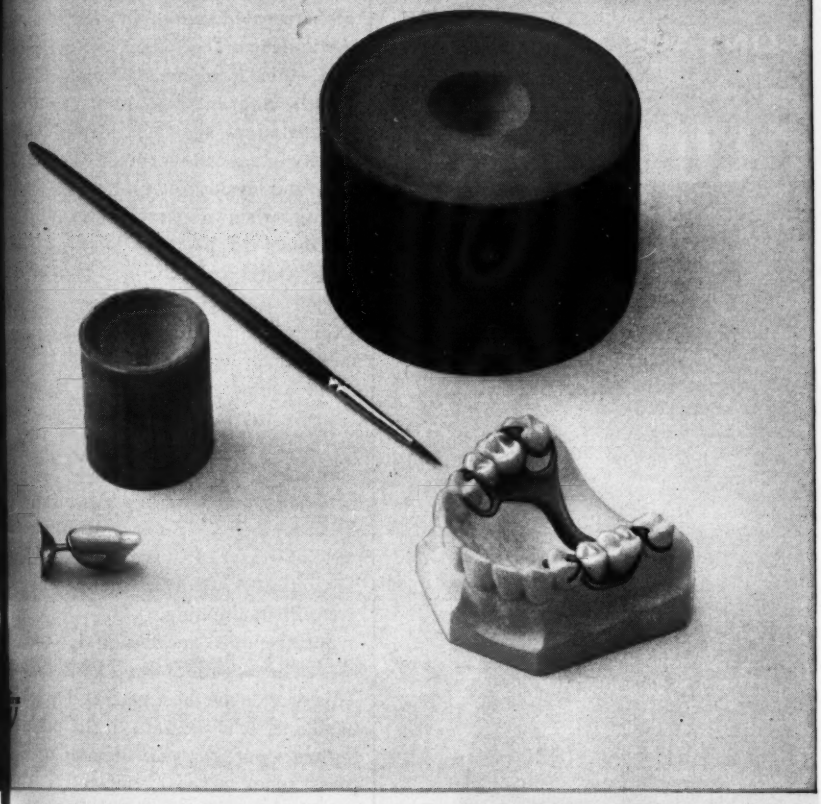

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Infectious Hepatitis in Children

The incidence of infectious hepatitis is highest in children 4 to 14 years of age. The actual incidence may be even higher than recorded, since the disease is often not accompanied by jaundice in children. Nonicteric involvement makes control of outbreaks difficult because virus may be passed for long periods of time in the stools.

Up to 10 per cent of the general population may harbor the virus and thus serve as possible sources for exposure. Of adults over 30 years of age, 35 per cent have built up immunities, indicating that a high proportion of children are exposed.

The disease is spread by the fecal-oral route. Respiratory spread apparently is not likely. Infection may spread parenterally, since the virus can be recovered from the blood of infected persons for a limited period of time.

In infants, the usual incubation period is twenty to thirty days. First symptoms are fever, irritability and, often, rhinitis. Anorexia, vomiting, and diarrhea ensue. An enlarged tender liver is commonly found at times associated with severe abdominal pain and rigidity. During the prodromal period, liver function studies are abnormal and often remain so for a long time after apparent recovery.

Virus may continue to be excreted in the stools for many months after liver function has returned to normal. Most infants, however, apparently recover completely without permanent liver damage.

In older children, the disease begins with a slight prodrome of fever for two to four days and subsequent apparent improvement for three to eight days. Jaundice then appears accompanied by an enlargement and tenderness of the liver. Icterus intensifies for three to seven days, then serum bilirubin falls rapidly, bile reappears in the stool and nausea and liver pain rapidly subside.

With fatal disease, symptoms progress to convulsions and coma and death occurs within ten days of onset. Usually, however, jaundice gradually fades in one to three weeks after the crisis. In this convalescent stage, liver function may be abnormal for at least two to three weeks.

Supportive therapy, particularly complete bed rest, is of great importance. Activity increases nausea, aggravates pain, leads to prolongation of the active phase and increases the incidence of permanent liver damage. Children are probably best kept out of school until all liver function tests are normal. Palatability of diet is more important than rigid control of types of food. The diet should be liberal in proteins and adequate in vitamins. Additional vitamins are not necessary unless food intake is noticeably decreased.

Grulee, Clifford G., and Brawner, Hugh Page: Infectious Hepatitis in Children, Louisiana M. Soc. **107**:188-193 (June) 1955.

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Anesthesia

Whenever an anesthetic is administered, an emergency may arise that will require resuscitation. Since the commonly employed respiratory stimulants are valueless and often harmful when respiration is seriously depressed, anesthetics should not be administered unless oxygen and a means of positive pressure administration are available, instruments are at hand to maintain an open airway, and a suction machine and implements to aspirate the trachea and pharynx are accessible.

The use of one drug for all patients is unscientific and basically unsound. The anesthetic selected should be the drug least harmful to the patient and best adapted to the surgical requirement. The technique should be as simple as possible.

Local anesthesia is commonly used. Toxicity depends on the concentration in the blood stream and involves stimulation of the central nervous system or depression of the vascular system. An anaphylactic reaction, with sudden syncope after injection of minute amounts of local anesthetic, rarely occurs. Allergic manifestations of antigen-antibody type are noted after repeated exposures to local anesthetic drugs. The toxicity of procaine and other local anesthetic agents is greatly augmented by epinephrine.

Inhalation anesthesia employs a variety of agents. Nitrous oxide, ethylene, and cyclopropane are excellent agents when given by experienced personnel to properly selected persons. Only a low concentration of oxygen can be given with nitrous oxide, which is a distinct handicap in many situations.

Anoxemia resulting from anemia when other inhalation anesthetics are used may cause irreversible brain damage despite a high gross volume of oxygen delivered in a gas mixture. Ether induction is slow and unpleasant but safe. Vomiting is frequent but usually occurs while laryngeal reflexes are still functioning.

Intravenous anesthesia is today synonymous with Sodium Pentothal®. This drug is the most perfect hypnotic available. It is pleasant to the patient but does not stop pain stimuli or depress reflex activity efficiently. The principal complication with Pentothal is hypoxia which sometimes results in permanent brain damage or even death.

Patients of advanced age do not tolerate large doses of Pentothal and children are more safely anesthetized with other agents. Pentothal is never used in patients with asthma or anemia and is not recommended for surgery about the mouth, nose, or neck. The drug is not satisfactory for operations on the skin because large doses are required.

Phelps, Malcolm E.: Office Anesthesia: Types not to use and why, Southern Med. J. **49**:291-296 (*March*) 1956.

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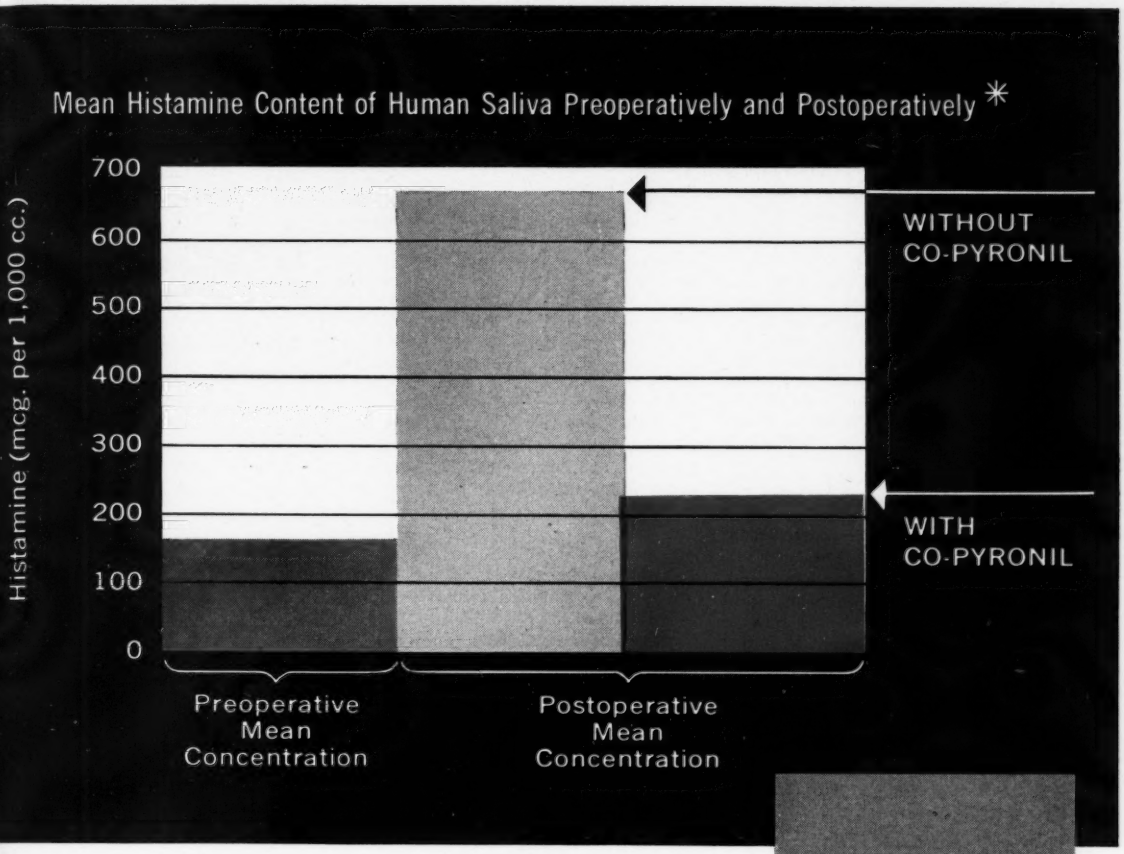

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*Adapted from J. Oral Surg., *13*:193, 1955.

***Dosage:** 1 pulvule at least forty-five minutes preoperatively. Continue with 1 pulvule every four hours for six doses and then 1 pulvule every eight hours as long as needed.*

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Here is an incredible fact. The land of Peru was conquered in 1532, along with thousands of natives, by one hundred eighty Spaniards and twenty-seven horses. Not only that, but they sailed all the way from Panama to do it! Such is the power of progress.

So what is this to dentistry? Let us change the objective from conquest to science. The power of progress is so great that, when used to any end, the results can be equally incredible. For instance. The sulphas and penicillins of medicine marked the end of an era that began with Pasteur. Many diseases were wiped out or minimized to the point of insignificance. Yet my own respected twice-my-age physician died clutching a bottle of aspirin in one hand and iodine in the other. Such also is the power habit—distrust and reluctance to give up the old.

Today in dentistry we are eighty thousand strong. How many of us will retire with the odor of phenol on our sleeve? Now is an era in dentistry that started with the introduction of plastic dentures, followed in short order by plastic teeth, fillings, *et al.* Through many successes, many failures—dentures are now routine. Plastic teeth are in ever increasing use, plastic fillings are controversial. There is a reason. It is not color stability (PEARLon mineral plastic fillings are entirely color stable with any technic.) The reason is two-fold.

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TWO: The brush technic is not conducive to good powder-liquid ratio. It is not conducive to good color accuracy. It is not conducive to density or any other physical property. It is an erratic way to combine powder and liquid and the results have been just as erratic. It is a wonder the results have been as good as they are. Now it is a fact that a filled mineral plastic has the merits of a perfect anterior filling material. Its insolubility alone is a tremendous advantage over porcelain. The big thing is to get it into the cavity so that it actually possesses these advantages. We believe we have the answer. It is the five-one technic.

The perfect ratio of powder to liquid in PEARLon is FIVE TO ONE. (The brush method gives a very erratic three parts powder to five parts liquid.) PEARLon is now available in premeasured capsules. Each capsule contains enough powder to absorb four drops of liquid from a PEARLon dropper. You can now always be certain that every filling of PEARLon you place has the exact powder-liquid ratio. When the mix has become plastic, wet the dry cavity with PEARLon liquid to insure cavity wall adhesion; then place the filling using synthetic porcelain technic, resin matrices, etc. Always fill an approximal to excess and finish with strips. A PEARLon filling placed this way should be as permanent as it is possible to be. It will never wash out. Corners can be restored, under the gum fillings confidently placed, whole teeth built up.

We consider this progress. We hope you consider it progress also. If you use plastics, PEARLon 57 is obviously your choice. If you do not, ask yourself this question. Can I use my present anterior filling material to build up a corner of an anterior tooth? Your dealer will be glad to send you a PEARLon 57 outfit, or we will send you a generous sample for $1.00.

In 1500, one Spaniard with "modern" equipment equalled 1,000 natives. In 1957, one PEARLon filling with "modern know how" will outwear, outlast and outperform many older type filling materials.

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Atherosclerosis

MEN WITH the body type of prominent muscularity, compactness, and "maleness," the so-called mesomorphic type, are most likely to develop coronary disease at a younger age. Obviously mesomorphy is hardly a remediable condition, but it is possible that diet and other measures may prevent the early onset of coronary atherosclerosis in this group.

Certain races appear to be prone to atherosclerosis regardless of diet. The Jews are perhaps the best example of this. Do Jewish males produce more testosterone and/or less heparin than, for example, Eskimos, who on a high-fat diet have a low incidence of atherosclerosis? Or is the anatomy, biochemistry, and physiology of the vessel wall, all of which are hereditarily conditioned, different in different races?

From *U.S. Armed Forces Medical Journal* 7:1569 (Nov.) 1956.

Contra-Angles

Are We Losing the War Against Chronic Disease?

Everyday in his practice the dentist comes face to face with chronic disease. Few of his adult patients are free from aches, pains, or disabilities. In almost any social gathering the topic of conversation turns at some time to recitations of ailments, symptoms, operations, bizarre or commonplace diseases. The person past 45 who does not have some sign or symptom of chronic disease is the exceptional one.

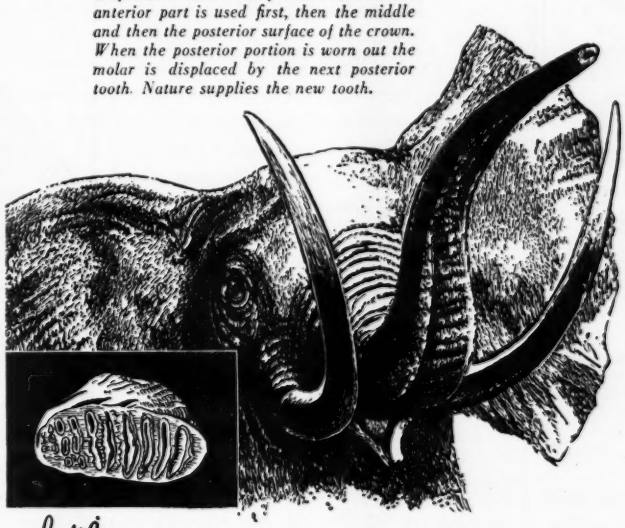
Why a country that places itself at the head of the world and arrogates to itself the role of trying to direct the affairs of every other nation should have such a miserable health record is a question for the most astute philosopher. We claim a superiority in human affairs, but the extent of chronic disease and disability in the United States gives us no reason for pride. We concern ourselves with living conditions in far-off countries, but let many of our own citizens live in squalor, poverty, and want. We throw our money around the world in the form of foreign aid, but are niggardly about the health and welfare of people in our own land. We preach the virtues of freedom, but say little about the health conditions among our own people.

Although we do have more personal freedom to move about and live as we please, we are a long, long way from the perfect state. Poverty, ignorance, prejudice, poor health conditions are still conspicuously among us.

Why are the degenerative and chronic diseases on the increase? There are probably many factors, but one that is outstanding is the poisoning being inflicted upon our people by pollutions of the atmosphere, the

where **NATURE NEEDS NO HELP . . .**

Elephant molars move forward so that the anterior part is used first, then the middle and then the posterior surface of the crown. When the posterior portion is worn out the molar is displaced by the next posterior tooth. Nature supplies the new tooth.



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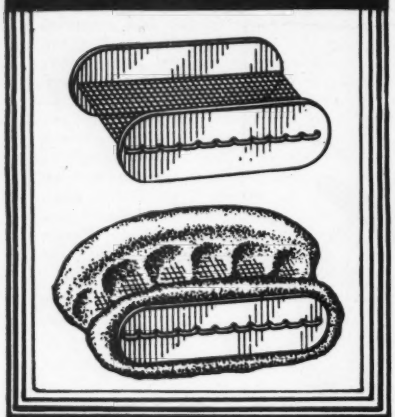

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soil, our water supply, our foods. Every time that a natural substance is removed from a food, every time an adulterant is added to a food, the balance in nature is disturbed. The human organism adjusts to change slowly and through the long projection of time. The chemical and cellular processes within the body cells cannot react to the passing whims of chemists without disturbance in function. It took thousands of years for the body to adjust itself to changing environmental conditions. When these conditions are suddenly altered by the actions of men the cells cannot make the adjustment—disease is the result.

The Boston Nutrition Society has sent an open letter to the president of Harvard University protesting the standards of research in the Department of Nutrition, School of Public Health. The Society is specifically concerned with the subsidization and domination of research projects in nutrition by industries that have an economic stake in the results of the research. The Society fears pressures from special interests in the nutritional research programs.

In an open letter to President Pusey of Harvard under the heading "Are We Losing the War Against Chronic Disease?" the Boston Nutrition Society quotes these facts:

"Dr. W. Coda Martin, Chief of the Geriatrics Clinic, Metropolitan Hospital, New York, in his 'Report on the Health of the Nation' given before the annual meeting of the Natural Food Associates on February 11, 1956, at Terre Haute, Indiana, included the following pertinent data:

" 'The grand total of registered chronic illnesses in the United States today is 95,788,534 an astounding figure for the most prosperous nation in the world . . .

" 'Chronic diseases had replaced acute infectious diseases to such an extent by 1939 that Dr. S. S. Goldwater, Commissioner of Hospitals, New York City, warned that if their prevalence continued, "America may some day become a nation of invalids . . ."

" 'By 1945, the Metropolitan Life Insurance statistics showed that deaths due to chronic diseases had increased to 82 per cent from 54 per cent in 1901 . . .

" 'It is estimated by the National Association for Mental Health that at least 6 per cent of the population of the United States, or 9,000,000 persons are suffering from emotional or other personality disturbances . . .

" 'The U. S. National Cancer Institute . . . reports that 'a third of all Americans now living . . . will probably develop cancer before they die'...

" 'Coronary thrombosis is on the increase in the United States . . . .

" 'On May 16, 1955, Dr. Paul White and Dr. Norman Joliffe reported to Congress that the United States is "one of the most unhealthy countries in the world" in regard to coronary heart disease; that heart disease among men from 45 to 65 years of age is two to three times higher in the U. S. than in England, France, Germany, Italy, and Spain . . .

" 'Weakness and fatigue are not confined to the adult. The result of a

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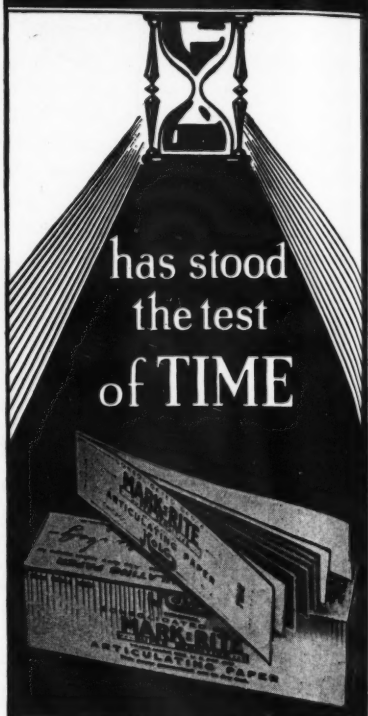

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muscular fitness test of American school children between the ages of 6 and 16 years revealed that 57.9 per cent failed in a minimum muscular fitness test. In contrast to this poor showing only 8.0 - 9.5 per cent of European children tested failed in the same test. (From report by Kraus and Hirschland, Institute of Physical Medicine, Bellevue Medical Center.)

" 'A recent nutritional report from a ten-year survey of the eating habits of the present-day teenagers . . . found approximately ¾ or 75 per cent of boys and girls between the ages of 13 and 19 are undernourished. They do not get sufficient protein, calcium, vitamins and minerals to maintain strong muscles, steady nerves and resistance to acute degenerative diseases . . .

" 'Latest figures indicate that there are about 1,000,000 juvenile delinquents in the United States today and experts predict that the figure will probably grow to 2,000,000 by 1960...

" 'In one week period ending December 11, 1954, a survey by the American Institute of Public Opinion found colds reported in ⅓ of American homes, with an estimated total of 29,000,000 persons affected. It is estimated that American business loses $5,000,000,000 annually from colds...

" 'Recent surveys reveal that approximately 2,000,000 people in the United States have incipient or acute diabetes . . .

" 'During the past two years there has been a 100 per cent increase in the number of hepatitis cases . . . A recent report from a research group on hepatitis in a New York hospital state it is their belief that there is a direct relationship between hepatitis cases and D.D.T. on food . . .

" 'A check-up of 500 apparently healthy business men, average age of 48 years, at the University Hospital, Ann Arbor, Michigan, revealed that 41 per cent of them suffered from physical diseases of which they were not aware, and 11 per cent were aware of some specific illness or a total of 52 per cent who needed immediate treatment, and 77 per cent of these healthy men had some physical abnormality which did not require immediate treatment . . .

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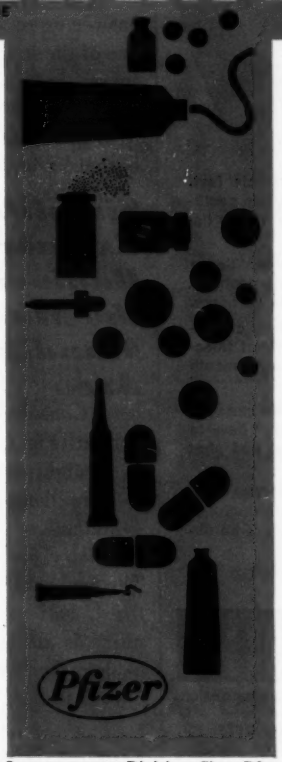

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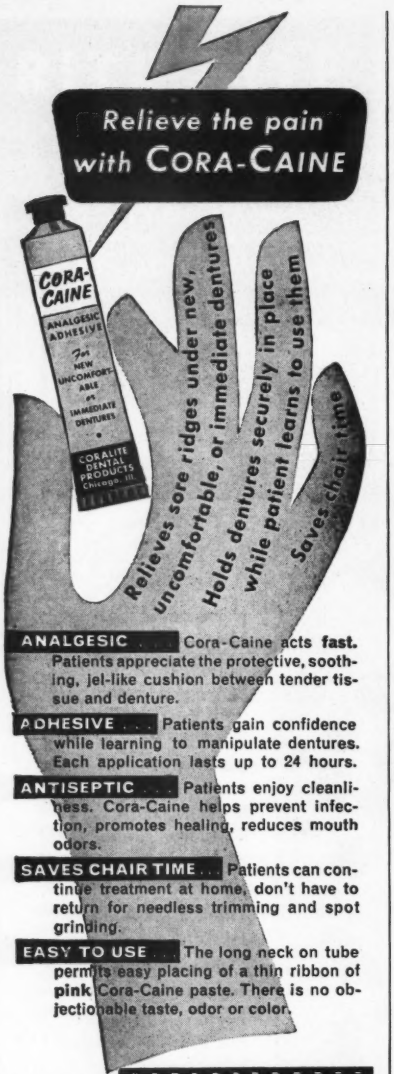
" 'This study was confirmed by Dr. Elson and Dr. Huth, of the University of Pennsylvania. They found that out of 1000 apparently well individuals examined only 13 per cent were entirely free of defects . . .

" 'An extremely significant report on the possible future health of the nation was the examination of the coronary arteries of 200 apparently healthy young soldiers with an average age of 22.1 years, who were killed in action in Korea. The examination revealed that 77.3 per cent had gross evidence of coronary arteriosclerosis. If these revealing facts can be accepted as a general average, it means that three-fourths of the young men today have now or will soon have the potentials for coronary thrombosis . . .

" 'Another examination of 50 executives reveals that fatigue was an outstanding complaint in 60 per cent of the men . . .

" '. . . with facts of this type available one does not need a crystal ball to forecast the future health of the nation . . . Quality food free of 'econom-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ic poisons' and an educational program to reduce the consumption of nonvital foods such as sugars and fats is a must to prevent national disaster . . . ' "

Anyone who speaks up against food adulteration in any of the many forms is subject to "name calling." The most common epithets are "food faddist" or "food fakir." If you object to spraying foods with poisonous chemicals, picking fruits green and then applying a dye, to injecting or administering antibiotics to poultry and dairy herds, to removing minerals and vitamins from natural foods, to adding chemical adulterants to preserve foods from normal chemical changes, you are offending the commercial interests of some of our largest and most influential corporations. Whenever corporate profits are endangered we can be certain that the public relations counsellors will go to work to change the situation—even if that requires a bit of character assassination directed against those who are in the opposition.

If you think that we are losing the war against chronic disease, the first thing to do in looking for the possible answer is to examine the nature of one of the few things that all mankind shares in common—the desire and need for food and the nutritive quality of the foods that are taken to satisfy that basic demand. —E. J. R.

Simplified Extraoral Radiography of the Maxillary and Mandibular Molar Area

(*Continued from page* 267)

gonion (Fig. 6). The exposure time is ¼ second. (Standard Dental Machine —10 milliamperes and 60 Kilovolts.)

Method of Taking X-ray of Right Maxillary and Mandibular Areas — The lead rubber is slid along to cover the L half of the holder. The technique is repeated for the right side as described in paragraph A. Figures 7, 8, 9 and 10 are typical x-ray films.

Conclusion

A simple and practical technique for extraoral radiography of the maxillary and mandibular molar areas has been presented. These films can be taken routinely when the regular dental films are taken by the dentist or trained auxiliary personnel. On *one* 5 by 7-inch film four distinct, diagnostic views are obtained. One side is almost an exact duplication of the other. This procedure is so precise that comparative views can be taken at various intervals. The cost of the film per view is surprisingly economical.

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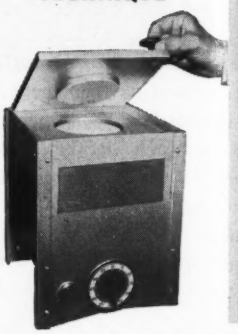

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Thumbsucking

EXTRANUTRITIONAL sucking is common in healthy and contented babies in whom it is not inhibited. In babies whose feeding situations are satisfying ones, gratification strengthens the sucking. This source of gratification is carried over to extra periods apart from feeding. Thus the infant may learn to relive a pleasant, dependent situation independent of the parent figure by reproducing the sucking. A resourceful baby learns to alleviate his inner needs and frustrations by substituting this pleasurable act for situations where comfort depends upon the environment. Several authors have suggested that strengthening this activity in infancy serves to encourage the growth of independence in the infant . . . Seventy healthy, apparently happy babies were studied in an attempt to evaluate the common occurrence of extranutritional sucking and its importance. Sixty-one manifested an appreciable amount of extra sucking which seemed to be gratifying in itself to the infant and which did not necessarily represent fatigue, hunger or discomfort. The onset of this varied from birth to 3 months of age. Its intensity increased until 7 months then began to decrease spontaneously, coincident with other motor accomplishments. By 12 months all but 4 of these babies had ceased to suck their hands except under stress. Only 2 have continued beyond the age of two.

T. B. Brazelton, M.D., *Pediatrics* (March) 1956 in *Journal of the American Medical Association* 161:672 (June 23) 1956.

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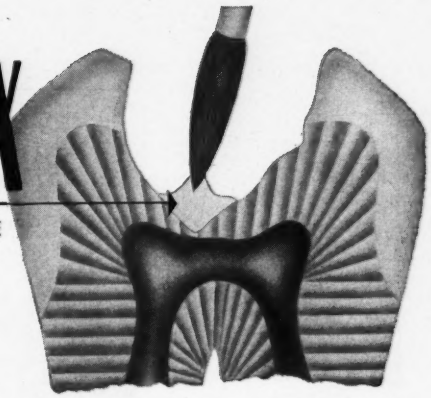

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